

# MONTHLY WEATHER REVIEW.

WILLIS L. MOORE, Chief U. S. Weather Bureau.

Vol. 38.

DECEMBER, 1910.

No. 12.

Editor, P. C. DAY, In Charge Climatological Division.

## DISTRICT EDITORS.

### *District No. 1, North Atlantic States.*

Wilford M. Wilson, Ithaca, N. Y.

### *District No. 2, South Atlantic and east Gulf States.*

Charles F. von Herrmann, Atlanta, Ga.

### *District No. 3, Ohio Valley.*

Ferdinand J. Walz, Louisville, Ky.

### *District No. 4, Lake region.*

Prof. Henry J. Cox, Chicago, Ill.

### *District No. 5, Upper Mississippi Valley.*

George M. Chappel, Des Moines, Iowa.

### *District No. 6, Missouri Valley.*

Montrose W. Hayes, St. Louis, Mo.

### *District No. 7, Lower Mississippi Valley.*

Isaac M. Cline, New Orleans, La.

### *District No. 8, Texas and Rio Grande Valley.*

Bernard Bunnemeyer, Houston, Tex.

### *District No. 9, Colorado Valley.*

Frederick H. Brandenburg, Denver, Colo.

### *District No. 10, Great Basin.*

Alfred H. Thiessen, Salt Lake City, Utah.

### *District No. 11, California.*

Prof. Alexander G. McAdie, San Francisco, Cal.

### *District No. 12, Columbia Valley.*

Edward A. Beals, Portland, Oreg.

## CONTRIBUTING CORRESPONDENTS.

Summaries of weather conditions and meteorological data are contributed by the directors of the following meteorological and other services:

The Meteorological Service of the Dominion of Canada.

The Central Meteorological and Magnetic Observatory of Mexico.

The Meteorological Service of Cuba.

The Meteorological Observatory of Belen College, Habana.

The Government Meteorological Office of Jamaica.

The Meteorological Service of the Azores.

The Meteorological Office, London.

The Danish Meteorological Institute, Copenhagen, Denmark.

The Physical Central Observatory, St. Petersburg, Russia.

The Philippine Weather Bureau, Manila.

The General Superintendent of the United States Life-Saving Service.

The Director-General of Mexican Telegraphs.

Contributions for the MONTHLY WEATHER REVIEW concerning agriculture, transportation, water uses and resources, forestry, and similar practical subjects, should be addressed to the editors of the several districts interested in the subjects. The post-office addresses are at the U. S. Weather Bureau local offices in the cities mentioned.

Contributions for the MONTHLY WEATHER REVIEW from foreign correspondents should be addressed to the Chief, U. S. Weather Bureau, Washington, D. C.

Papers on general meteorology should also be addressed to the Chief of the Bureau.

Price of a single copy, 35 cents; \$4.00 per year. Foreign postage additional. District separates, 5 cents each.

## CONTENTS.

### PART I.—CLIMATOLOGY.

1. Climatological Summaries, } Complete for each district;  
Tables, } also issued as separates.  
Maps. }
2. Papers on climatology in relation to agriculture, transportation, water resources, etc.

### PART II.—METEOROLOGY.

3. Weather, forecasts and warnings for the month.
4. Rivers and floods.
5. Special papers on general meteorology.

### PART III.—GENERAL TABLES AND CHARTS.

6. General Tables.
  - I. Climatological data for U. S. Weather Bureau stations.
  - II. Accumulated amounts of precipitation.
  - III. Data furnished by the Canadian Meteorological Service.

### Part III.—GENERAL TABLES AND CHARTS—Continued.

7. General Charts
  - I. Hydrographs of several principal rivers.
  - II. Tracks of centers of high areas.
  - III. Tracks of centers of low areas.
  - IV. Temperature departures from the normal.
  - V. Total precipitation.
  - VI. Percentage of clear sky between sunrise and sunset.
  - VII. Isobars and isotherms at sea level; prevailing winds.
  - VIII. Total snowfall.



**Climatological Data for December, 1910.**  
**DISTRICT No. 1, NORTH ATLANTIC STATES.**

WILFORD M. WILSON, District Editor.

**GENERAL SUMMARY.**

The month of December, 1910, was exceptionally cold throughout the district. It was the coldest month of the year, which is very unusual, January or February nearly always claiming this distinction. It was also the coldest December in many years, certainly the coldest since the famous cold December of 1904, and, in some parts of the district, probably the coldest December since 1880 or 1876, both of which were exceptional in this respect.

The low average temperature of the month was due not so much to the occurrence of severe cold waves, although there were three severe cold periods during the month, as to the persistent, steady cold weather that characterized the first, second, and part of the third decades. The minimum temperatures were not unusually low for the season, but there was a rather remarkable absence of warm periods that usually accompany the passage of low areas. The number of such areas that passed directly over the district or sufficiently near to influence the weather to a marked degree was greater than usual, there being no less than seven, but the movement of these depressions was so rapid that the temperature conditions were not greatly affected. The high-pressure areas, of which there were seven also, being rather sluggish of movement and of considerable strength, therefore, dominated the conditions in the district for the most part. It was not until near the close of the month that the rather slow movement of a deep depression northeastward throughout the entire length of the district developed sufficient strength to break up the persistent cold weather and bring about the only comparatively mild period of the month.

The precipitation was generally not well distributed, and considerably below the normal amount. Snow fell to a considerable depth early in the month, and, as there was little melting, accumulated to a depth of from 10 to 15 inches over northern New York and New England. As far south as Maryland and northern Virginia there was sufficient snow for excellent sleighing during much of the month.

**TEMPERATURE.**

The mean temperature of the month was 25.6°, which is about 6° below the normal and 5° below the average for December, last year, and ranged from 20.7° in New York to 30.4° in Virginia. The deficiency was unusually uniform throughout the entire district, but slightly less in New England, and slightly greater in New York and Virginia than elsewhere. There were three marked cold periods, the 10-11th, 17th, and 31st; and one warm period, the 29th and 30th.

The first general cold period of the month occurred about the close of the first decade, although the average temperature since the beginning of the month had remained continuously below the normal over most of the district, and a period of unusually cold weather had been experienced in parts of Virginia during the 8th and 9th. The passage of a depression of moderate intensity down the St. Lawrence Valley, followed by the usual anticyclonic conditions, caused a very rapid change to colder over New England and New York during the afternoon of the 9th, which, spreading southward, reached the southern limits of the district by the morning of the 10th, where temperatures near zero were recorded. The cold weather continued throughout the 10th and 11th, with temperatures in New England and most of New York ranging from 0° to -10°. In some of the more elevated parts of these sections, temperatures of -20° were not uncommon, while one station, Indian Lake, in the

Adirondack Mountains, reported -28° on the 10th and -21° on the 11th.

The temperature moderated considerably during the next few days, but the comparatively slight rise had not brought it up to the normal when a second cold period developed on the 17th, which was about equally widespread and nearly as severe over most of the district as the preceding. Although more moderate conditions followed, the weather remained decidedly cold for the season until near the close of the third decade, when the only warm period of the month occurred. The rise of temperature set in during the 26th and culminated on the 29th and 30th, when the highest temperatures of the month were recorded generally. During the night of the 30th a sudden change to colder occurred and the month closed with decidedly cold weather in all parts of the district.

**PRECIPITATION.**

The average precipitation for the district was 2.37 inches, which is about 0.87 inch below the December normal and over 1 inch less than that of December, last year. The deficiency was general, but the distribution rather irregular, the amounts recorded at stations having records of 10 years or more being above normal in 26 cases, and below in 181. The greatest deficiency occurred in central New York, northern Pennsylvania, and northern New Jersey, where it ranged from 1 to 2 inches. This shortage was largely due to the fact that the storm of the 6-7th, with heavy precipitation in other districts, brought but little moisture to this region, passing too far south. The precipitation in this section had been similarly deficient for 6 to 8 months, and the early occurrence of prolonged freezing weather contributed much toward producing the low stage of wells, streams, and springs. Hence, the problem of water supply became remarkably serious before the heavy rains and thawing weather of the last week of December brought a measure of relief. The following paragraphs taken from the Reading (Pa.) Eagle of December 20 illustrate the conditions that prevailed in parts of the three States named:

The water situation in many sections of this and adjoining counties is becoming acute. Springs and wells are failing. Farmers are obliged to drive their live stock to the nearest streams, a distance of several miles. In some places snow is being melted in large quantities and the water used for domestic and other purposes.

Along the East Penn Railroad the situation is alarming. Wells are being sunk deeper in many places, and small factories are having artesian wells bored, in order to secure a more bounteous water supply.

The frequency of precipitation was not unusual for the month as a whole, cold and comparatively dry weather continuing until the 24th, and milder rainy weather until the 30th. During the first period snow was the prevailing form of precipitation, and the chief dates of its occurrence were the 6-7th, 11th, 15th, and 19-20th. On the 1st and 2d light snow was general from Pennsylvania northward, but the storms that followed affected only the southern part of the district until the 15th, when snow occurred over New York and the New England States. The first storm that caused precipitation of consequence in all parts of the district occurred on the 19-20th.

One storm that caused a heavy fall of snow over the southern part of the district between the 5th and 7th deserves special mention. Between the 3d and the 5th this storm had moved rapidly from the north Pacific coast to northern Alabama and Georgia, and, during the next two days passed northeastward, increasing in energy as it approached the Atlantic coast near eastern Virginia. Snow set in over the southern part of the district on the 5th and continued for



nearly 48 hours, reaching Pennsylvania and southern New York about one day later. The influence of this storm extended scarcely farther north than central Connecticut, but heavy snow, ranging in depth from about 4 to more than 10 inches, fell throughout the district south of that latitude, the average depth being probably not less than 6 inches. On Long Island the amounts recorded from this storm were as follows: Cutchogue, 13 inches; Oyster Bay, 8; Setauket, 9; Southampton, 19; and Wading River, 12 inches. It is believed that the snowfall was still heavier in parts of other States.

Most of the snow that resulted from this and other storms remained on the ground until about the 24th, except in the lowlands of the States south of Pennsylvania.

With the change to warmer weather that occurred about the 24th, rain became the prevailing form of precipitation and was of wide occurrence nearly every day. Considerably more than half of the month's precipitation occurred after the 24th, and in nearly all parts of the district, the greatest daily amounts, generally in excess of 1 inch, were recorded on that date. Moderately heavy rains were general over the district on the 28th and 29th, but on the 31st the weather became clear and cold.

#### RIVER CONDITIONS.

Low river stages were general during the month in all parts of the district. As in the preceding month, the greatest deficiency of water was in the Delaware system. At the beginning of the month most streams were somewhat below the usual stage for that season, but they gradually became lower for one or two weeks according to the locality, when

the continued cold weather caused them to freeze over. The low stages of the rivers together with the steadiness of the cold made unusually favorable conditions for the formation of ice. From the 28th to the 30th there was warm weather with general rains, which broke up the ice and caused the streams to rise rapidly. The Delaware at Port Jervis rose from 4.1 feet on the 30th to 9.7 feet on the following day.

The following taken from the report of the official in charge local office, Weather Bureau, at Harrisburg, Pa., illustrates the prevailing conditions for the central part of the district.

The upper portion of the north and west branches of the Susquehanna River became generally icebound during the first week of December, and the lower portions of both branches and the main river froze over during the second week of the month. Owing to continued cold weather the ice increased in thickness, and during the last decade of the month a large amount, ranging from 7 to 12 inches in thickness, was harvested. Mild weather with rains during the closing days of the month caused a general break-up in both branches, but no unusual stages or serious ice gorges resulted.

#### SUNSHINE.

The amount of sunshine was fully up to the average, and the values recorded in various parts of the district showed more uniformity than is usually the case. The percentage obtained at the several stations ranged between 41 and 58, except at Eastport, Me., where it was only 16. The average for all stations was 47 per cent, which is 7 per cent above the average for the preceding month. The number of days with 80 per cent or more of the possible sunshine varied from 6 to 12, there being 10 as far north as Portland, Me.; but at Eastport, Me., there were none, while 21 days gave a percentage of 20 or less. The total number of hours of sunshine averaged 137.



TABLE 1.—Climatological data for December, 1910. District No. 1, North Atlantic States.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast days.	Prevailing direction of wind.
Maine.																				
Bar Harbor.....	Hancock.....	39	24	23.0	- 3.8	80	30	- 6	18	43	4.25	- 0.65	1.70	9.0	12	15	0	16	nw.	William Miller.
Cornish.....	York.....	778	55	20.8	- 4.4	44	24	- 8	11	39	3.42	- 0.17	1.08	17.5	8	13	8	10	w.	T. H. West.
Eastport.....	Washington.....	53	38	22.6	- 2.7	49	30	- 4	31	43	3.68	- 0.31	1.36	12.0	14	0	7	24	w.	U. S. Weather Bureau.
Ellsworth.....	Hancock.....	0	0	20.0	.....	47	25 - 12	18	52	3.44	.....	1.74	8.0	14	10	2	19	w.	S. P. Sutton.	
Fairfield.....	Somerset.....	90	23	18.8	- 2.9	44	24	- 0	13	27	2.90	+ 0.23	1.46	13.2	8	13	7	11	.....	Edw. F. Parker.
Farmington.....	Franklin.....	430	13	17.0	- 0.5	41	20 - 13	11	41	2.74	- 0.41	1.53	12.5	11	14	4	13	nw.	State Normal School.	
Gardiner.....	Kennebec.....	163	18	19.8	- 3.9	52	25 - 12	18	43	2.97	- 0.11	0.96	16.5	13	15	4	12	nw.	Samuel D. Soule.	
Greenville.....	Piscataquis.....	1,000	6	13.8	.....	40	24 - 16	31	34	2.64	.....	1.43	4.0	4	.....	.....	.....	.....	U. S. Weather Bureau.	
Houlton.....	Aroostook.....	362	8	16.8	.....	41	26 - 20	19	58	0.87	.....	0.45	7.0	4	11	4	16	nw.	Bangor & Aroostook R. R.	
Lewiston.....	Androscoggin.....	185	36	19.5	- 3.9	44	24 - 4	18	38	3.14	- 1.01	1.51	13.2	11	14	7	10	nw.	Union Water Power Co.	
Madison.....	Somerset.....	257	7	15.2	.....	43	25 - 15	19	47	2.99	.....	1.57	8.0	8	17	11	3	nw.	Wm. Jardine.	
Millinocket.....	Penobscot.....	386	7	17.1	.....	44	24 - 11	31	36	2.96	.....	1.97	7.2	10	11	3	17	nw.	H. S. Ferguson.	
North Bridgton.....	Cumberland.....	450	17	21.4	- 2.3	46	30 - 5	11	36	3.63	+ 0.49	1.52	2.5	9	10	12	9	n.	G. E. Chadbourne.	
Orono.....	Penobscot.....	129	41	19.6	- 1.7	47	24 - 18	18	42	2.88	- 0.71	1.40	12.5	11	11	6	14	nw.	Agricultural Exp. Station.	
Patten.....	.....	550	8	16.9	.....	40	25 - 15	31	43	2.73	.....	0.98	8.0	11	3	11	17	w.	Bangor & Aroostook R. R.	
Portland.....	Cumberland.....	99	39	22.0	- 5.1	48	30 - 0	31	43	3.43	- 0.25	1.19	13.0	11	10	6	15	nw.	U. S. Weather Bureau.	
Presque Isle.....	Aroostook.....	0	0	13.4	.....	39	24 - 20	18	45	1.73	.....	0.80	6.8	8	8	1	22	nw.	San Lorenzo Merriman.	
Rumford Falls.....	Oxford.....	505	17	17.8	- 3.7	42	24 - 7	31	37	2.31	- 0.31	1.14	11.1	10	17	7	7	nw.	Chas. A. Mixer.	
Winslow.....	Kennebec.....	90	15	16.2	.....	45	24 - 18	18	40	2.78	.....	1.74	13.5	8	14	8	9	w.	Hollingsworth & Whitney Co.	
New Hampshire.																				
Alstead Center.....	Cheshire.....	1,120	6	17.3	- 6.0	45	19 - 8	31	31	2.93	+ 0.06	0.94	18.0	10	16	6	9	nw.	Frank Dewing.	
Benton.....	Grafton.....	0	0	14.1	.....	40	24 - 15	31	38	2.38	.....	1.00	13.5	6	12	9	10	nw.	N. H. State Sanatorium.	
Bethlehem.....	.....	1,470	18	13.2	- 7.4	44	30 - 17	31	44	2.38	+ 0.26	0.68	17.0	12	11	8	12	sw.	Benjamin Tucker.	
Concord.....	Merrimack.....	350	50	20.6	- 5.8	49	30 - 4	31	48	2.47	- 0.88	0.99	11.1	11	7	12	12	nw.	U. S. Weather Bureau.	
Durham.....	.....	88	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Agricultural Exp. Station.	
Franklin.....	Merrimack.....	440	11	20.4	.....	43	30 - 7	31	34	2.62	.....	1.09	20.5	8	9	12	10	nw.	Dr. C. P. Webster.	
Grafton.....	.....	863	24	16.6	- 5.2	42	30 - 12	31	33	3.55	+ 0.24	0.90	23.0	9	8	9	14	nw.	Perley R. Kimball.	
Hanover.....	.....	603	76	14.6	- 6.8	42	30 - 14	10	40	2.38	+ 0.02	1.06	12.1	12	6	10	15	nw.	Dartmouth College.	
Keene.....	Cheshire.....	506	25	20.0	- 5.6	44	24 - 11	10	36	1.90	- 0.84	1.00	9.2	9	7	14	10	nw.	Samuel Wadsworth.	
Nashua.....	Hillsboro.....	125	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Jackson Co.	
Newton.....	Rockingham.....	22	22	22.0	- 5.7	50	30 - 3	11	37	1.91	- 0.94	0.99	8.5	10	10	15	6	nw.	W. C. Gale.	
Plymouth.....	Grafton.....	300	22	18.0	- 4.2	39	24 - 7	31	30	2.64	- 0.53	1.20	16.5	7	15	2	11	w.	Mrs. Hattie G. Trow.	
Vermont.																				
Bloomfield.....	Essex.....	915	3	13.6	.....	41	24 - 19	11	35	1.74	.....	0.87	11.2	12	12	8	11	a.	Lyman Falls L. and P. Co.	
Cavendish.....	Windsor.....	820	7	17.6	.....	41	19 - 12	11	34	1.41	.....	0.73	8.0	4	16	6	9	w.	Miss M. A. Kingsbury.	
Chelsea.....	Orange.....	820	15	12.8	- 8.4	42	29 - 21	17	39	2.07	+ 0.02	0.85	19.0	8	12	5	14	n.	W. F. Dewey.	
Jacksonville.....	Windham.....	1,000	25	13.0	- 9.8	43	24 - 13	0	45	0.38	- 3.86	0.20	6.0	4	24	5	2	nw.	Miss Martha French.	
Manchester.....	Bennington.....	960	11	16.4	.....	44	24 - 11	10	39	0.87	.....	0.41	10.8	3	4	13	14	sw.	N. M. Canfield.	
St. Johnsbury.....	Caledonia.....	711	17	14.1	- 6.6	39	24 - 19	11	32	2.12	- 0.13	0.76	11.3	11	12	5	14	nw.	Fairbanks Museum.	
Woodstock.....	Windsor.....	700	18	13.0	- 8.5	41	30 - 21	22	41	2.14	- 0.39	1.07	15.2	5	3	1	27	.....	John S. Eaton.	
Massachusetts.																				
Amherst.....	Hampshire.....	222	21	21.8	- 5.5	47	24 - 2	10	38	1.72	- 1.79	1.34	2.5	7	12	9	10	nw.	Agricultural Exp. Station.	
Blue Hill.....	Norfolk.....	640	26	23.7	- 0.1	51	30 - 0	16	32	2.59	- 0.86	1.35	10.2	16	11	7	13	w.	Blue Hill Observatory.	
Boston.....	Suffolk.....	124	40	27.5	- 4.1	55	30 - 6	31	43	2.10	- 1.31	1.25	8.1	11	10	6	15	w.	U. S. Weather Bureau.	
Chestnut Hill.....	.....	124	30	26.4	- 4.0	54	30 - 1	11	31	2.91	- 0.29	1.48	9.5	10	20	2	9	.....	Metropolitan Water Board.	
Clinton.....	Worcester.....	370	14	23.8	.....	49	29 - 2	15	40	2.40	.....	1.25	7.7	8	17	7	7	.....	Do.	
Concord.....	Middlesex.....	139	20	22.8	- 4.7	51	30 - 5	11	41	2.03	.....	1.31	1.14	7.5	12	8	13	10	nw.	Fred A. Tower.
Fall River.....	Bristol.....	200	44	26.6	- 7.0	53	29 - 4	16	35	2.99	- 0.44	1.30	15.5	11	10	13	8	sw.	C. V. S. Remington.	
Fitchburg.....	Worcester.....	530	27	23.8	- 4.7	50	30 - 0	31	31	2.11	- 1.44	1.24	5.0	8	17	3	11	nw.	Dr. A. P. Mason.	
Framingham.....	Middlesex.....	160	30	24.4	- 5.9	51	30 - 2	10	37	2.43	- 1.20	1.27	9.5	10	.....	.....	.....	Metropolitan Water Board.		
Hyannis.....	Barnstable.....	31	19	27.0	- 9.5	46	30 - 4	16	23	3.54	+ 0.04	1.26	17.7	9	14	13	4	nw.	C. F. Sleeper.	
Lawrence.....	Essex.....	51	26	23.2	- 5.4	52	30 - 0	23	38	2.04	- 1.17	1.12	9.0	10	6	21	4	w.	Essex Co.	
Lowell.....	Middlesex.....	100	25	25.6	- 3.2	50	30 - 0	23	37	2.15	- 1.40	1.00	.....	9	.....	.....	.....	Prop's Locks and Canals		
Middleboro.....	Plymouth.....	53	24	24.7	- 6.3	53	29 - 11	17	41	2.80	- 0.41	1.24	10.6	12	8	10	13	w.	A. R. Gurney.	
Monson.....	Hampden.....	420	26	22.4	- 6.3	52	30 - 6	10	38	2.39	- 1.23	1.35	10.0	10	14	10	7	nw.	Dr. G. E. Fuller.	
Nantucket.....	Nantucket.....	15	24	30.5	- 5.9	40	30 - 9	16	31	4.33	+ 0.69	1.69	7.3	16	6	13	12	w.	U. S. Weather Bureau.	
New Bedford.....	Bristol.....	88	98	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	City Engineer.	
Norfolk.....	Norfolk.....	244	7	23.2	.....	57	30 - 11	10	40	4.05	.....	1.92	11.2	9	17	10	4	w.	Miss Ruby H. Martyn.	
Northampton.....	Hampshire.....	205	2	23.1	.....	47	24 - 0	10	40	2.00	.....	1.44	1.5	6	16	0	15	nw.	D. E. Hoxie.	
Plymouth.....	Plymouth.....	25	25	23.2	.....	52	30 - 1	17	44	3.11	.....	1.35	10.8	10	13	6	12	nw.	Miss Laura B. Knapp.	
Provincetown.....	Barnstable.....	40	23	30.8	- 4.3	51	30 - 9	16	28	2.75	- 0.97	1.27	9.5	9	22	0	9	w.	Gideon Bowley.	
Rockport.....	Essex.....	25	8	27.9	- 0.7	49	30 - 5	31	32	3.04	- 0.45	0.82	0.8	10	9	12	10	nw.	C. F. B. Bearse.	
Rutland.....	Worcester.....	1,160	8	20.2	.....	48	29 - 2	15	38	2.53	.....	1.41	5.0	7	13	7	11	sw.	State Sanatorium.	
South Egremont.....	Berkshire.....	764	8	18.7	.....	46	29 - 8	17	39	2.14	.....	1.00	10.2	9	.....	.....	.....	nw.	Roscoe C. Taft.	
Turners Falls.....	Franklin.....	200	19	21.4	- 4.1	42	24 - 3	10	26	2.08	- 1.21	1.39	5.2	7	.....	.....	.....	Turners Falls Co.		
Westboro.....	Worcester.....	288	36	26.4	- 3.8	50	30 - 2	16	30	2.17	- 1.11	1.50	5.2	10	.....	.....	.....	G. S. Newcomb.		
Williamstown.....	Berkshire.....	711	19	19.9	- 8.0	47	30 - 7	10	34	2.32	- 0.92	1.00	13.0	10	6	10	15	w.	Williams College.	
Worcester.....	Worcester.....	518	18	24.2	- 5.4	44	24 - 3	10	25	1.82	- 1.33	1.04	10.0	9	10	0	12	nw.	G. W. Swan.	
Rhode Island.																				
Block Island.....	Newport.....	36	3																	



TABLE 1.—Climatological data for December, 1910. District No. 1—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.					Sky.					Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of overcast cloudy days.		
New York—Cont'd.																				
Binghamton.	Broome.	875	19	21.0	- 0.7	48	29	- 6	17	41	2.41	- 0.53	0.95	9.3	15	4	5	22	U. S. Weather Bureau.	
Bouckville.	Madison.	1,350	13	17.2	- 5.3	41	30	- 11	31	32	2.60	- 1.10	0.55	17.5	12	4	12	15	L. W. Griswold.	
Boyd's Corners.	Putnam.	560	28								2.97	- 1.25							Thomas Manning.	
Carmel.	do.	500	18	21.7	- 7.8	44	24	- 5	17	35	3.00	- 1.27	1.65	3.0	10	18	3	10	Do.	
Chatham.	Columbia.	470	9	21.4		49	24†	- 5	17	33	1.47		1.00	3.0	8	9	11	11	Morton R. Tank.	
Cooperstown.	Otsego.	1,250	56								1.88	- 0.99	0.44	17.8	10	15	2	14	Elizabeth C. Keese.	
Corinth.	Saratoga.	542	8								2.25		0.95		6				A. M. Hollister.	
Cortland.	Cortland.	1,129	48	21.8	- 4.4	40	30	- 6	17	27	2.39	- 0.72	0.95	19.6	16	6	3	22	F. G. Baker.	
Cutchoqua.	Suffolk.	32	33	28.2	- 5.1	49	29†	- 4	17	29	3.88	- 1.47	1.70	18.0	11	10	17	4	Wm. A. Fleet.	
De Ruyter.	Madison.	1,300	7	20.2		41	29	- 11	26	42	2.88		0.95	14.8	11	4	7	20	B. D. Crandall.	
Easton.	Washington.		20								1.61	- 1.20	0.70	11.0	5				H. Taber.	
Elmira.	Chemung.	863	31	23.8	- 5.2	43	15†	- 5	16	37	0.00	- 1.82	0.50		2	2	12	17	Gerity Bros.	
Fort Hunter.	Montgomery.	280	2																C. E. Wing.	
Fort Plain.	do.	316	6	21.4		44	14	- 3	31	31	1.56		0.63	8.0	7	10	9	12	Abram Devendorf.	
Glens Falls.	Warren.	340	19	18.5	- 5.3	41	30	- 13	17	30	2.47	- 0.93	1.02	9.0	9	10	6	15	Prof. C. L. Williams.	
Gloversville.	Fulton.	850	18	16.7	- 6.2	40	30	- 10	10	29	2.43	- 1.40	0.78	12.5	9	10	12	9	W. L. McLean.	
Greenfield Center.	Saratoga.	314	12	17.0	- 7.6	40	24†	- 12	16	29	2.09	- 1.10	0.68	6.0	6	13	9	9	S. E. Darrow.	
Greenwich.	Washington.	425	13	18.8	- 5.1	45	30	- 11	18†	33	2.31	- 0.96	0.88	16.0	10	5	19	7	Homer J. Whitecomb.	
Griffin Corners.	Delaware.	2,260	10	19.2		49	15	- 12	17	37	2.20		0.90	6.0	8	18	6	7	Harold O. Judd.	
Haskinville.	Steuben.		15								1.60	- 0.51	0.35	14.9	13				W. G. Collins.	
Homer.	Cortland.		2	18.1	- 8.6	43	30	- 10	17	36	2.17		0.53	11.5	13	8	7	16	Charles C. Mortimer.	
Hoosick Falls.	Rensselaer.	410	8								2.29		0.63	11.2	10	20	3	8	Sanford L. Cluett.	
Indian Lake.	Hamilton.	1,705	11			40	30	- 28	10	49	2.90	- 0.57	1.05	21.0	5	17	2	12	Lester Severie, Jr.	
Jeffersonville.	Sullivan.	1,240	7	19.9		41	24†	- 14	17	38	1.77		0.70	10.0	9	10	14	7	Charles Wilfert, Jr.	
Lake Pleasant.	Hamilton.		3								2.00		0.90	11.0	4				Willet Lawrence.	
Liberty.	Sullivan.	2,300	28	14.8	- 9.8	43	29	- 5	16†	33	2.10	- 1.74	0.80	11.5	12	10	1	20	Dr. H. M. King.	
Little Falls.	Herkimer.	924	12	16.3	- 6.7	43	30	- 11	31	37	1.52	- 1.70	0.65	10.8	8	14	9	8	O. J. Dempster.	
Mohawk Lake.	Ulster.	1,245	14	21.2	- 4.9	48	30	- 2	16	33	2.58	- 1.07	1.80	4.0	4	18	6	7	Albert K. Smiley.	
Morehouseville.	Hamilton.	1,097	2	14.1		42	30	- 27	10	42	2.07		0.60	27.5	16	9	6	16	Theodore C. Remondia.	
Mount Hope.	Westchester.	200	13																Wm. A. Cornelius.	
Newark Valley.	Tioga.	825	23								1.50	- 0.93	0.68	15.0	11	8	7	16	M. D. Clinton.	
New Berlin.	Chenango.		3								1.40		0.55	5.5	16	4	3	24	Roger Greene.	
New Lisbon.	Otsego.	1,234	20	16.0	- 8.2	43	29†	- 10	17	39	1.90	- 1.17	0.92	14.0	11	5	4	22	G. A. Yates.	
New York City.	New York.	314	85	28.0	- 0.4	53	30	- 9	16	36	1.05	- 1.50	0.82	8.9	9	12	8	11	U. S. Weather Bureau.	
North Creek.	Warren.	1,002	2	16.0		38	29	- 15	17	35	1.98		0.80	10.0	7	14	8	9	W. G. Kenwell.	
Northville.	Fulton.	742	8								2.59		1.10	8.5	6				P. C. Pickard.	
Norwich.	Chenango.	1,015	4	19.5†		40	30	- 4	17	29†									P. L. Clark.	
Oneonta.	Otsego.	1,112	16	20.2	- 7.7	47	30	- 1	16†	36	1.99	- 1.16	0.75	9.8	14	8	9	14	H. W. Lee.	
Oxford.	Chenango.	916	45	19.2	- 8.5	40	30	- 11	17	30	3.16	+ 0.09	0.70	19.0	15	1	12	18	John P. Davis.	
Port Jervis.	Orange.	470	26																Prof. J. M. Dolph.	
Salisbury.	Herkimer.	1,526	13	13.4	- 7.8	38	24	- 16	31	29	2.88	- 1.45	0.80	13.0	10	16	8	7	Joseph Ryan.	
Salisbury Mills.	Orange.	314	11	22.8		49	23	- 7	18	45	1.86	- 2.04	0.72	7.5	7	22	3	6	H. Powell Ramsdell.	
Scarsdale.	Westchester.	200	6	26.2		52	29	- 2	17	28	2.15		0.75	10.5	7	15	12	4	C. H. Wilmarth.	
Setauket.	Suffolk.	40	25	28.5	- 6.3	51	30	- 7	17	28	2.87	- 1.10	1.36	10.0	9	10	4	11	Selah B. Strong.	
Sherburne.	Chenango.		3								2.11		0.76	14.7	12	7	3	21	E. B. Collins.	
Southampton.	Suffolk.	36	9	28.0		48	24†	- 4	17	32	4.05		1.00	21.7	12	11	10	4	W. L. Jagger.	
Southeast Reservoir.	Putnam.	310	15								2.48	- 1.71							Thomas Manning.	
Spier Falls.	Saratoga.	400	9	18.2		42	1†	- 12	16	37	2.01		0.91		6	12	3	16	Geo. E. Fifield.	
Trenton Falls.	Oneida.	751	7								2.31		0.50		9				C. W. Young.	
Tribes Hill.	Montgomery.	268	7								2.30		0.80	13.0	5				R. S. Marshall.	
Utica.	Oneida.	537	44								2.13	- 1.20	0.56		10				W. E. Young.	
Wading River.	Suffolk.	112	4	27.0		51	24	- 2	11	30	2.99		1.33	14.5	13	13	6	12	H. B. Fullerton.	
Wappingers Falls.	Dutchess.	110	20	22.9	- 5.2	46	24	- 3	17	30	2.02	- 1.83	0.54	9.0	9	11	12	8	H. C. Townsend.	
Warwick.	Orange.	538	16								1.70	- 1.36	0.90	12.0	7				John W. Sly.	
Waverly.	Tioga.	824	28	20.7	- 7.7	42	14†	- 18	17	44	1.51	- 1.02	0.48	9.7	16	0	17	14	Hon. J. F. Shoemaker.	
West Berne.	Albany.	946	11	18.4	- 5.5	51	30	- 14	12	36	1.29	- 1.13	0.30	9.0	7	9	2	20	W. J. Haverly.	
West Point.	Orange.	167	61	24.8	- 6.6	50	30	- 6	16	34	2.01	- 1.51	1.30	5.0	8	14	10	7	Maj. Chas. M. Gandy.	
Windham.	Greene.	1,530	10	18.6	- 6.4	51	30	- 5	16	37	1.60	- 1.61	1.05	4.0	7	10	17	4	A. R. Mott.	
Pennsylvania.																				
Altoona.	Blair.	1,181	22	29.4	+ 0.4	54	29	- 7	10	30	1.53	- 1.36	0.73		10				C. W. Billin.	
Bethlehem.	Northampton.	260	1	26.2		51	30	- 4	10†	34	2.29		1.00	12.2	6	18	0	13	Prof. E. C. Roest.	
Clearfield.	Clearfield.	1,107	2	22.6		43	27	- 9	17	43	2.75		0.52	18.3	12	13	4	14	Raymond C. Ogden.	
Emporium.	Cameron.	1,050	22	21.8	- 8.1	45	29	- 1	18	35	3.61	+ 0.11	0.74	12.0	11	4	8	19	T. B. Lloyd.	
Ephrata.	Lancaster.	384	11	24.2	- 6.7	47	29†	- 2	17	31	2.23	- 1.40	0.78	11.7	9	16	3	12	W. L. Frantz.	
Everett.	Bedford.	1,080	13	23.6	- 5.8	47	29	- 8	9	39	0.64	- 2.62		9.7	6	0	5	26	B. L. Steckman.	
George School.	Bucks.	184	4	26.0		52	30	- 3	10	37	2.97		1.62	9.5	8	14	2	15	Prof. A. C. Smedley.	
Gettysburg.	Adams.	600	36	26.4	- 5.2	49	30	- 2	10	28	2.11	- 1.15	0.88	12.4	10	9	9	13	Col. E. B. Cope.	
Gordon.	Schuylkill.	804	7	21.6		46	29†	- 10	10	39	4.04		1.46	30.5	13	16	3	12	Capt. J. G. Johnson.	
Hamburg.	Berks.	380	10	24.8	- 7.8	45	24	- 4	12	34	3.32	- 0.57	0.70	10.0	10	18	2	11	W. J. Kalbach.	
Harrisburg.	Dauphin.	361	22	26.7	- 6.1	48	30	- 8	10	27	2.57	- 0.98	0.97	13.8	1					



TABLE 1.—Climatological data for December, 1910. District No. 1—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast days.	Prevailing wind direction.
New Jersey—Cont'd.																				
Boonton.	Morris.	413	30																Foster Peer.	
Bridgeton.	Cumberland.	30	29	28.4	- 7.3	54	29	0	10	31	2.95	- 0.90	1.38	9.0	13	7	11	nw.	H. A. Jorden.	
Burlington.	Burlington.	12	36								2.95	- 0.90	1.38	12.0	8			nw.	D. S. B. McCoy.	
Canton.	Salem.	34	16								3.22	- 0.38	1.02	12.3	8	15	9	nw.	J. H. Maskell.	
Cape May City.	Cape May.	17	26	31.4	- 6.6	50	30	14	17	23	2.94	- 0.84	0.78	2.3	8	10	12	nw.	U. S. Weather Bureau.	
Charlotteburg.	Pamlico.	719	18	24.2	- 5.8	51	29	3	18	32	2.30	- 2.09	1.43	7.0	9	11	8	nw.	G. S. Briggs.	
Chatham.	Morris.	234	8								2.09	- 1.28	1.20	9.0	9			nw.	M. A. Butler.	
Clayton.	Gloucester.	126	17	27.8	- 6.2	54	29	3	10	32	2.70	+ 0.36	1.16	14.0	7	11	8	nw.	W. T. Farley.	
College Farm.	Middlesex.	100	15	25.9	- 6.7	53	30	1	10	34	2.50	- 1.24	1.17	8.8	10	11	11	nw.	G. B. Thrasher.	
Culvers Lake.	Sussex.	848	9								2.05	- 1.35	1.35	13.6	14	10	12	nw.	B. E. Riker.	
Dover.	Morris.	575	26	22.6	- 7.5	48	29	4	17	25	2.90	- 1.22	1.43	10.3	9	10	12	nw.	W. C. Harris.	
Elizabeth.	Union.	33	31	28.0	- 5.5	50	30	5	17	22	2.79	- 1.00	0.95	9.5	8	11	12	nw.	W. M. Oliver.	
Flemington.	Hunterdon.	187	22	25.8	- 6.2	49	30	7	10	36	2.28	- 1.40	1.06	8.0	8	11	10	w.	H. E. Deats.	
Haddonfield.	Camden.	75	16	27.4	- 5.9	55	29	1	10	33	3.04	- 0.61	1.15	12.9	9	11	6	14	nw.	C. F. Richardson.
Hammononton.	Atlantic.	80	12								3.36	- 0.20	1.18	18.7	8			nw.	Orville Bassett.	
Highstown.	Mercer.	85	18	26.9	- 6.7	55	30	0	10	33	2.80	- 0.91	1.11	12.5	6	13	6	12	nw.	Ernst Wenger.
Highwood.	Bergen.	90	20	25.4	- 7.0	52	30	3	17	34	2.27	- 1.18	1.18	8.0	11			nw.	Charles J. Bates.	
Imlaystown.	Monmouth.	106	24															nw.	Dr. F. C. Price.	
Indian Mills.	Burlington.	76	21	26.8	- 7.3	58	29	5	10	30	3.32	- 0.77	1.20	14.8	11	12	8	11	nw.	James Armstrong.
Jersey City.	Hudson.	15	12	28.4	- 5.6	53	30	9	10	30	2.50	- 1.06	1.03	11.7	9	11	10	10	nw.	S. K. Pearson, Jr.
Lakewood.	Ocean.	54	8	26.4	- 6.4	54	29	1	10	37	3.35	- 1.15	1.07	10	8	12	11	nw.	Ralph Robertson.	
Lambertville.	Hunterdon.	95	24	26.3	- 7.0	50	30	4	12	31	2.40	- 1.38	1.04	11.8	9	11	11	9	nw.	W. R. Horne.
Layton.	Sussex.	500	11	20.8	- 6.6	45	24	14	17	39	2.97	- 1.20	1.45	13.0	9	10	10	11	nw.	W. C. Hursh.
Little Falls.	Passaic.	175	7								1.99	- 1.10	8.4	9				nw.	A. Sweetman.	
Long Branch.	Monmouth.	30	3	28.1	- 7.0	54	30	4	17	33	2.84	- 0.78	1.15	15.5	9	11	8	12	nw.	B. B. Bobbitt.
Mahwah.	Bergen.	312	8															nw.	C. L. Barker.	
Moorestown.	Burlington.	71	48	27.4	- 5.9	54	29	3	10	32	3.06	- 0.52	1.14	14.1	10	13	9	9	nw.	J. C. Beans.
Newark.	Essex.	140	67	27.4	- 5.6	48	24	6	17	30	2.85	- 0.95	1.18	13.4	11	10	6	15	nw.	Prof. Wm. Wiener.
New Brunswick.	Middlesex.	61	57	26.1	- 7.0	51	30	2	10	38	2.70	- 1.05	1.00	10.0	9	12	8	11	w.	W. T. Woerner.
Newton.	Sussex.	678	31															nw.	W. G. Atwood.	
Northfield.	Atlantic.	110	39								3.52	- 1.12	9.3	8				nw.	W. L. Flick.	
Paterson.	Passaic.	110	39	26.5	- 6.6	45	24	5	17	30	2.12	- 1.99	1.13	8.6	11	10	14	7	nw.	H. A. Probert.
Phillipsburg.	Warren.	100	13	24.9	- 6.4	50	30	2	12	28	2.31	- 1.37	1.17	9.9	12	10	11	10	w.	D. W. Smith.
Plainfield.	Union.	100	24	26.2	- 5.7	50	30	1	10	30	2.54	- 1.35	1.06	10.0	12	10	11	10	nw.	John Neagle.
Pleasantville.	Atlantic.	26	12								2.91	- 0.76	0.91	8	11	8	12		nw.	L. Van Gilder.
Pompton Plains.	Morris.	195	8								2.07	- 1.16	8.0	10				nw.	M. S. Taylor.	
Rancocas.	Burlington.	68	47								2.88	- 0.82	1.24	12.6	10	15	4	12	nw.	Spencer Haines.
Rivervale.	Bergen.	70	19	22.9	- 7.8	48	29	4	10	38	2.54	- 1.03	1.20	10.5	10	12	9	12	nw.	G. S. M. Holdrum.
Somerville.	Somerset.	76	27	25.9	- 6.0	50	30	1	17	32	2.54	- 1.03	1.20	10.5	10	12	9	12	nw.	P. Hardcastle.
South Orange.	Essex.	300	40	26.0	- 6.0	51	30	4	17	32	2.27	- 1.56	1.40	9.5	9	11	11	9	nw.	Dr. W. J. Chandler.
Sussex.	Sussex.	442	29	23.8	- 6.0	44	27	5	13	31	1.92	- 1.83	0.56	11.5	10	7	13	11	nw.	George Dymock.
Trenton.	Mercer.	60	38	26.8	- 7.6	53	29	5	17	31	2.85	- 1.15	11.5	12	9	10		nw.	Paul H. Wendel.	
Tuckerton.	Ocean.	23	17	27.4	- 7.1	52	30	2	10	34	3.41	- 0.87	1.13	12.2	8	13	5	13	nw.	F. R. Austin.
Vineland.	Cumberland.	118	41															nw.	Alfred Chalmers.	
Woodbine.	Cape May.	43	19	28.8	- 6.2	56	29	2	10	33					10	7	14		nw.	Prof. H. A. Dodge.
West Virginia.																				
Bayard.	Grant.	2,300	8	23.0	- 4.8	50	29	8	17	31	3.81	- 1.51	1.00	13.0	17	7	4	20	w.	Solomon Clark.
Burlington.	Mineral.	875	15	27.6	- 4.8	53	30	2	10	35	1.30	- 1.00	1.00	10.0	3			nw.	J. W. Vandiver.	
Franklin.	Pendleton.	3	3	27.6	- 4.8	56	29	1	17	40	1.00	- 0.60	1.00	3	16	4	11		nw.	A. A. Martin.
Lost City.	Hardy.	4	4	28.2	- 4.2	58	29	2	9	42	1.80	- 0.80	1.40	4	15	7	9	w.	B. D. Hinegardner.	
Martinsburg.	Berkeley.	435	19	27.4	- 5.5	50	29	0	10	30	1.45	- 1.12	1.20	13.5	3	16	9	6	nw.	G. W. Van Metre, C. E.
Moorefield.	Hardy.	900	14	26.9	- 6.8	50	28	3	10	44	1.50	- 0.70	1.00	14.0	4	3	23	5	nw.	John C. Fisher.
Romney.	Hampshire.	824	14	26.5	- 6.2	57	29	0	10	34	1.88	- 0.57	0.85	11.0	5	6	16	8	w.	John C. Linthicum.
Upper Tract.	Pendleton.	1,230	12	27.6	- 6.7	60	29	0	9	42	1.03	- 1.62	0.50	10.0	3	34	15	9	nw.	J. M. Mallow.
Maryland.																				
Annapolis.	Anne Arundel.	45	32	29.0	- 8.0	50	28	10	16	29	3.47	- 0.32	1.10	9.0	6	12	7	12	nw.	W. M. Abbott.
Bachmans Valley.	Carroll.	800	17	26.2	- 5.2	52	30	1	10	36	2.35	- 2.06	0.80	15.0	7	18	9	4	w.	Elmer E. Yingling.
Baltimore.	Baltimore.	115	40	31.2	- 5.7	58	30	12	10	31	2.45	- 0.63	1.05	12.1	7	11	5	15	sw.	U. S. Weather Bureau.
Cambridge.	Dorchester.	25	12	32.0	- 5.8	62	29	15	10	30	3.43	- 0.47	1.17	6.2	6	12	8	11	nw.	T. E. Keenan.
Cheltenham.	Prince George.	230	10	30.5	- 6.3	63	29	5	10	33	3.55	- 0.90	1.35	7	10	10	11	nw.	J. E. Burbank.	
Chestertown.	Kent.	80	25	30.2	- 5.1	58	29	4	10	34	1.78	- 1.68	1.10	12.0	4	11	14	6	se.	M. W. Thomas.
Cheswille.	Washington.	530	13	25.7	- 6.1	53	30	3	10	32	1.73	- 1.08	0.52	11.6	7	14	13	4	nw.	D. Paul Oswald.
Clear Spring.	do.	650	13	26.8	- 4.2	57	15	4	10	32	1.37	- 2.36	0.80	11.2	5	9	16	6	nw.	W. W. Frantz.
Coleman.	Kent.	80	12	30.2	- 4.2	55	29	8	10	29	2.35	- 2.10	1.05	10.0	7	18	2	11	nw.	J. S. Harris.
College Park.	Prince George.	170	30	28.6	- 7.0	60	29	4	10	40	1.86	- 1.12	0.85	8.5	5	7	21	3	nw.	Prof. H. J. Patterson.
Cumberland.	Allegany.	700	36								1.40	- 1.05	0.60	10.5	4				nw.	J. W. Frantz.
Darlington.	Harford.	300	18	26.2	- 7.4	49	29	3	10	30	2.40	- 1.48	1.29	14.0	5	10	11	10	nw.	Prof. A. F. Galbreath.
Denton.	Caroline.	42	15	29.2	- 6.0	60	29	0	10	33	2.93	- 0.10	1.00	9.5	7	17	4	10	nw.	H. B. Mason.
Easton.	Talbot.	35	19	30.8	- 6.7	60	29	7	10	28	2.32	- 0.78	0.69	7	13	6	12	nw.	Henry Shreve.	
Emmitsburg.	Frederick.	720	37	2																



TABLE 1.—Climatological data for December, 1910. District No. 1—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit							Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of overcast cloudy days.		
District of Columbia.	District of Columbia.	112	40	30.5	- 5.6	62	29	8	10	29	2.64	- 0.52	0.90	1.0	8	13	2	16	nw.	U. S. Weather Bureau.
Washington, Virginia.																				
Culpeper.	Culpeper.	450	3	27.5		50	29	- 5	9	41	1.96		0.80	11.0	5	6	20	5	nw.	Col. H. C. Burrows.
Dale Enterprise.	Rockingham.	1,350	31	25.6	- 9.8	57	29	- 4	8	43	2.07	- 0.63	0.72	12.0	8	8	17	6	sw.	Rev. L. J. Heatwole.
Dorwell.	Hanover.	134	10	32.6		66	29	8	14†	41	0.65		0.30	4.0	4	10	16	5	w.	R. F. & P. R. R.
Eastville.	Northampton.	15	1	36.3		67	30	14	17	28	3.77		105	1.0	9	19	3	9	nw.	T. B. Robertson.
Fredericksburg.	Spottsylvania.	100	22	30.9	- 6.0	67	29	4	14	43	2.72	- 0.76	0.99	10.5	7	14	7	10	nw.	S. G. Howison.
Lincoln.	Loudoun.	500	10	26.7		56	27	- 5	8	44	1.83		1.50	15.0	6	7	15	9	n.	Dr. George Roberts.
Mount Weather.	do.	1,726	7	25.7	- 5.8	57	29	9	16	29	3.67	+ 0.58	2.22	21.1	8	12	8	11	nw.	U. S. Weather Bureau.
Quantico.	Prince William.	16	13	30.3	- 4.6	61	29	7	10†	39	2.71		1.65	7.0	5	13	9	9	nw.	R. F. & P. R. R.
Staunton.	Augusta.	1,380	19	30.3	- 8.4	60	29	7	13	34	2.02	- 0.46	.85	10.6	7	11	11	9	sw.	Ernest Nothnagel.
Stephens City.	Frederick.	710	19	28.1	- 6.8	55	29†	5	10	33	1.95	- 0.66	1.02	16.3	6	13	9	9	nw.	B. R. Argenbright.
Warsaw.	Richmond.	160	19	33.3	- 4.9	67	29	12	17	45	2.40	- 0.34	0.30	9.0	7	9	11	11	n.	C. H. Constable.
Woodstock.	Shenandoah.	927	15	28.2	- 6.4	58	29	- 4	9	38	1.60	- 0.60	.70	16.1	8	16	9	6	w.	Mrs. Adolyn G. Artz.

a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.

† Also on other dates.

‡ Separate dates of falls not recorded.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

|| Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

¶ Estimated by observer.

||| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.



TABLE 2.—Daily precipitation for December, 1910. District No. 1, North Atlantic States.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Maine.																																	
Bar Harbor	Coast		T.	T.				.10	T.						T.	.45				.55		.20	T.		.90	.80	.10	.10	.05	.60	.40	4.25	
Cornish	Saco	.10	.10										T.			.40				.40		.80			1.08		T.		.42	.12		3.42	
Danforth	Penobscot	.05	.15												.05	T.				.10					.30	.15		.10	.20	.25		1.35	
Eastport	Coast	.01	.02					.18	.01	.01	.16				.10	.31						T.			.16	.40		.37	.08	.34	.23		3.08
Ellsworth	do.	.09	.04	.11											T.	.37				.46	.22		.08		.01	1.74		.12	.23	.14	.14		3.44
Fairfield	Kennebec		.23												.31				.11		.36				1.46		.06		.28	.09		2.90	
Farmington	do.	.07	.07												.17			.31		.17				1.53	.07		.02	.04	.28	.01		2.74	
Gardiner	do.	.10	.10							.01					.12	.03			.23		.23	.04			.96	.06		.06		.33	.11		2.97
Greenville	do.	T.	.07	T.	T.			T.	T.						.03			.24		.15				1.43		.06	T.	.22	.30	.15		2.64	
Houlton	St. John															.45									.01			.03		.40			0.87
Lewiston	Androscoggin	.11	.11												.21			.22		.28				1.51	.17		.03	.15	.23	.14		3.14	
Madison	Kennebec		.16												.07			.22		.15				1.57	.29		.02		.51			2.99	
Millinocket	Penobscot		.02	.06					T.						.03	.08		.04	.16					*	1.97			.05		.28	.30		2.96
North Bridgton	Saco	.10	.03												.10		.10						1.00		1.52		.02		.40	.15		3.63	
Oquossoc	Androscoggin														.03	.40					.05	.15		1.85				.40	.25	.35		1.80	
Orono	Penobscot	.03	.15						.02						.05	.02								1.40			.10		.05	.20	.46		2.73
Patten	do.	.10	.02	T.											.05	.28					T.	T.		1.17	.02	.03	T.	.16	.11	.06		3.43	
Portland	Coast	.03	.03													.28					T.	T.		1.13		.25	.80		.08		.06	T.	1.73
Presque Isle	St. John	.30	.05	T.	T.				T.						.06	T.		T.		.13				1.14			.01	.01	.21	.23	.02		2.31
Rumford Falls	Androscoggin	.02	T.												.07				.24		.36			1.14								1.70	
The Forks	Kennebec														.05				.10		.05				.95			.40	.15			2.78	
Winslow	do.		.15												.20					.02				1.74		.03			*	.36			
New Hampshire.																																	
Alstead Center	Connecticut	T.	.05											T.	.30	T.			.32	T.	.80	T.		.94	.02	.20	T.	.23	.04	.03		2.93	
Benton	do.	.16		T.					T.						.17			T.		.61	.11		.33	1.00			T.	T.	.10	.05	.10	.19	2.58
Bethlehem	do.	.45	.30	.03											.25					.03	.45	.06		.68									2.29
Brookline	Merrimac														T.					.28	.50			1.40			.01		.10				2.47
Concord	do.	.02	.11		T.										.03				T.	.24	.08		.02	.97			T.	.01	.35	.02			2.62
Durham	do.														.02				.30		.79			1.09			T.		.15	.14	.08		2.55
Franklin	do.	T.	.05												.05				.25		.80			.90		.10		.12	.15			2.38	
Grafton	do.	.02	.16												.04				.24	.02	.39			1.06		.04			.29	.05	.09		1.90
Hanover	Connecticut	.08	.10	T.	.01										.05				.19		.23	T.		1.00	T.	.05	.04	.24	T.	.08			
Keene	do.	T.	.02												.05									.99		.05		.12	.02	.05			1.91
Nashua	Merrimac		.08												T.	T.			.35	.30	.04		1.30				T.	.07	.15	.24	.20		2.64
Newton	do.	T.	.08												.06																		
Plymouth	do.	T.													T.	T.				.35	.30	.04		1.30									
Vermont.																																	
Bloomfield	Connecticut	.11	.06	T.	T.					.02					T.	.15	.01	T.		.12		.05			.87	.01	T.	.08		.13	.13	T.	1.74
Cavendish	do.	T.													T.	.12		T.		.35	T.	.19		.73	T.	T.		.14				1.41	
Chelsea	do.	.15													T.	.12				.30	.05	.30		.85		T.		.25	.05			2.07	
Jacksonville	do.															.10		.07						.20		.01						0.38	
Manchester	Hudson	T.	T.															.07	T.	.39						T.		.41	T.			0.87	
St. Johnsbury	Connecticut	.13	.03	T.	T.					T.	.01				T.	T.	.12	T.	T.	.19		.23	.10	.76			T.	.04	.24	.27		2.12	
Vernon	do.														.03					.01	.08	.02	.19	1.06	.08	.20		.02	.01			1.70	
Woodstock	do.														T.				.38		.01	.33		1.07				.21	.15			2.14	
Massachusetts.																																	
Amherst	Connecticut														T.				.12	.01	T.		T.	1.34		.06		.10	.01	.08		1.72	
Ashland	Merrimac						.34								.04				.14	.41	.11			1.35		.07			*	.11		2.64	
Bakers Bridge	do.					.30									.07					.16		.25		.85	.25					.15		1.80	
Bedford	do.					.19									.02					.16	T.	.39	.05	1.23	.03	T.	T.		.09	.03		2.19	
Blue Hill	Coast					.12	.17				.01	T.			.05	.07				.21	.01	.21	.02	1.35	.11	.04	.01	.02	.04	.15		2.59	
Boston	do.					.06	.24								.12	T.				.17	.06	.05		1.23	.02	.03		.06		.06	T.	2.10	
Chestnut Hill	do.					.56									.13	T.	.10	.12			.22		.04	1.48	.05			.09	.12			2.91	
Clinton	Merrimac					.19									.06					.17		.40		1.25	.02		.09		.22			2.40	
Concord	do.					.16									.03	.02				.13		.40	.02	1.09	.05	.03	T.	.01	.04	.05		2.03	
Fall River	Coast					.42	.25				.09				.07	.07				.31	.09	.05		1.30	.03				.35			2.99	
Fitchburg	Merrimac					.37									.06					.20		.13	.14	1.24		T.	.12	.05	.17			2.11	
Frankingham	do.					.37									.03					.13	.40	.01		1.27	.05				.06			2.43	
Haverhill	do.					.03									.05	.05				.11		.21	.02	.78	.16	.02	.02	T.	.08	.07		1.66	
Hingham	Coast					.55									.18					.09	T.		1.28	.03				.04		.10		2.63	
Hyannis	do.					1.10									.15					.43		.02		1.26					.07	.26		3.54	
Jefferson	Merrimac					.31									.35					.17	.04	.35		1.32				.14	.36			2.73	
Little Cohasset	do.					.08									.08					.15	.41	.18		1.27				.06				2.61	
Lawrence	do.					.08									.08					.19		.32		T.	1.12		.03						



TABLE 2.—Daily precipitation for December, 1910. District No. 1—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Connecticut—Cont'd.																																	
Falls Village	Housatonic	T.					.04									.05			.06	.19		T.		.20	1.01		.05		.05	.10	.25	1.98	
Hartford	Connecticut	T.					.44	.03				T.	T.			.02				.19	.02	T.		T.	1.03		.03		.05		.12	1.93	
Hawleyville	Housatonic																																2.16
Little Konomoc	Coast						.65				.02									.35					1.10			.04				2.30	
New Haven	do.	T.			T.	.03	.48	.10				T.	T.			.02				.32	.01				1.07		.03		.14	T.	.11	2.77	
New London	do.						.59	.15												.21	.02				1.22		T.		.58			2.77	
North Grosvenor Dale	do.						.27										.07			.19		.06			1.50		.07		.05	.28		1.49	
Norwalk	do.				*		.39					.15					T.			.28	.03				1.10		.06		.15	.06	.09	2.31	
Southington	do.						.70	.05												.15	T.				1.55	T.			.05	.15		2.65	
South Manchester	Connecticut						.54											1.48							.16			.35				2.63	
Storrs	Coast						.50					T.					T.			.20					1.32		.09		.05	.23		3.30	
Voluntown	do.						.25	.52												.58					1.20	.34			.05	.36		1.92	
Wallingford	do.	.04					.52										.16			.23					.60			.15	.18			2.21	
Waterbury	Housatonic						.27					T.	T.				.08								1.35		.05		.11	T.	.14	2.16	
West Simsbury	Connecticut						.15					T.					.08				.14	T.			*	1.38		.04		.10		.29	2.15
New York.																																	
Addison	Susquehanna	.08	.02		T.					T.		.25	.01			.05	.02			.01	.01		T.	T.	.30	T.			.18	.01	.25	T.	1.19
Albany	Hudson	.07	T.							T.		.40	T.			.06				.06	.07	T.		T.	.65	T.	T.	.10	T.			1.01	
Alfred	Susquehanna	.30	.30	.10	.05					.15		.25	.10							.15	.25	.05			.25	.10		.40	.08	.50		3.28	
Amsterdam	Mohawk				.02					.10						.10	.25			T.					.65		.10		.28	.45	T.	1.95	
Athens	Hudson	.02		T.	T.	T.	T.			T.		T.	T.			T.				.10	.04	T.		T.	1.14	T.		.08	T.	.04		1.43	
Ballston Lake	do.	.10	T.		T.					T.						*	.28			.09	.01			T.	.50	T.	.02	T.	*	.28	.13	1.41	
Bedford	Coast	T.					.34					.14	T.			.16				.12	T.				.16		.20		.16			2.12	
Binghamton	Susquehanna	.21	.02	T.	T.			T.	.01		.05	.14	T.		.01	.08	T.	T.		.03	.03	T.		.30	.65	T.	.11	.13	.06	.08		1.91	
Bouckville	do.	.10	.15					.25		.15		.15				.05				.10		.40			.55		.10		.35	.07	.33	2.60	
Carmel	Hudson						.10	.41				.03	.10							.23			.03		1.65		.16		.14	.15		3.00	
Chatham	do.	.10	T.									T.	T.			.10				.09	.11	.02		T.	1.00		.02	.03	T.	T.		1.47	
Cooperstown	Susquehanna		.05					.14				.09				.10				.18					.95			.47		.45		1.88	
Coopersville	Hudson	.10														.10				.18					.95			.47		.45		2.25	
Cortland	Susquehanna	.09	.07	.04	T.				.03	T.		.10		.01	.08	.05	.07			.04		.05			.95		.19	.15	.07	.40		2.39	
Cortland	Coast					.10	.60	.60					.10		.10					.20	.20				1.70	.05	.10		.13			3.88	
De Ruyter	Susquehanna																					.12			.31		.18			.30		1.61	
Easton	Hudson															.70																0.60	
Elmira	Susquehanna	.10										.50																					
Fort Hunter	Mohawk																																
Fort Plain	do.	.02	T.		T.			T.	T.	T.		T.	T.			T.	T.			.16	T.	T.			.63	T.	.12		.38	.09	.16	1.56	
Glens Falls	Hudson	.20	.02					T.				T.				.18				.22	T.	.10			1.02	T.		.30	.15	.28		2.47	
Gloversville	Mohawk	T.			T.			.11							.06	.20				.12					.78		.12		.55	.23	.26	2.43	
Greenfield Center	Hudson	.05														.30				.10					.68			.60	.36			2.09	
Greenwich	do.	.11	.08							T.					.45	.05				T.	.20				.88		.02		.30	.17	.05	2.31	
Griffin Corners	Delaware	.03						T.		T.		T.	T.	.04		.05				T.	.22	T.	T.	T.	.90		.11	.15	.70			2.20	
Haskinville	Susquehanna	.35	.05	.10				.10		.35		.35				.18		.05		T.	.05	.03			.06		.05	.18	.05			1.60	
Homer	do.	.15	.09	T.	T.			.12		T.	.15	.05	T.	.17	.08	T.				T.	.02	.15	T.	T.	T.	.05	.53	.24	.37			2.17	
Hoosick Falls	Hudson	.12	.03	T.	T.					T.						.26				T.		.06	.08		.25	.35		.20	.31	.63		2.29	
Indian Lake	do.															.80				.25					1.05		.25	.55	.25			2.90	
Jeffersonville	Delaware	T.	T.	T.	T.	T.	.05			T.		.12		T.	T.	.03	T.			.15	.10	T.		T.	.70	T.	.24	.30	.08	T.		1.77	
Lake Pleasant	Hudson															.50				.20				.40				.90				2.00	
Liberty	Delaware	T.	T.	.05			.10	T.		T.		.19	T.			.05	.09				.15		.12				.20	.80	.10	.20	.05		2.10
Little Falls	Mohawk	T.								.14		.30				.05				.14					.65	T.	.05	.14	.23	.12		1.62	
Mohok Lake	Hudson						.30					.30													1.80			.18				2.58	
Morehouseville	Mohawk	.05	.03		.03			.05	.08						.10	.15	.05			.20	.10	.05			.60		.05	.03	.20	.30		2.07	
Mount Hope	Coast																																
Newark Valley	Susquehanna	.07	.03	T.	.02					.15	T.	.10				.05	T.			T.	T.	T.		T.	T.	.20		.08	.10	.05		1.50	
New Berlin	do.	.07	.01	.01	T.			.02	.02	.05	.03	T.	T.			.01				.20		.10			.55	.07	.06	.06	.04	.10		1.40	
New Lisbon	do.	.10	.09							T.	.05		.05		T.		.02			.12	T.	.03			.92		.14	.26	.12	T.		1.90	
New York City	Coast	T.				.02	.36	.02			.01	.21	T.		T.	T.				.22								.42	.45			1.95	
North Creek	Hudson						.02													.12					.80			.42	.45			1.98	
Northville	do.								.02											.12								.48	.67			2.59	
Norwich	Susquehanna	.02	.01	T.						.02		.06				.08				.05	.03	.09			.75	T.	.15	.08	.22	.10	.33	T.	1.99
Oneonta	do.																																
Oxford	do.	T.	.10	T.	T.																												



TABLE 2.—Daily precipitation for December, 1910. District No. 1—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Pennsylvania—Cont'd.																																	
Hanover	Susquehanna	T.	T.		T.	*	*	.83			.18		.04			T.				.12	T.			*	.90				.04	.02	.05	2.18	
Harrisburg	Susquehanna	T.	T.		T.	.36	.75	T.			.38	.03	T.			T.				.02	.04	T.		.28	.58	T.	.02		.08	.01	.02	2.57	
Huntingdon	Junata	T.	T.		T.	.30	.30	.05			.05	T.	T.							.06	.10	T.		.93	T.			.23	.06			2.35	
Hyndman	Potomac	T.	T.	T.	T.	.58					.35					T.				.12	T.			.95	T.				.05		T.	1.85	
Keenett Square	Coast					.09															.02	.70				.01				T.	.15	1.36	
Lancaster	Susquehanna					.36	.60	.06				.32														.64			.30			2.38	
Lansdale	Schuylkill					.36	.60	.06				.32														.56			.10	.05		0.95	
Lawrenceville	Susquehanna	.02	.05		.01	.22	.32	.06		T.		.10				.05				.05		.11	.02		T.	1.14		.02	.15	.04		2.41	
Lebanon	do					.01	.05	T.	T.	.01	T.	.30	.05	T.		.05	.01		.01	.02	.05	.05		.06	1.20	.01	.01	.28	.11	.16		2.63	
Le Roy	do	.10	.03	.01	.02	.15	.70	.10				.50				.10				.01	.15			.07	1.01		.08	.30	.28	.06		3.73	
Lewisburg	do	.15	.05		.02	.15	.70	.10				.50																				1.76	
Lloyd	do					.02	.10	.30				.30				T.				.11	T.				.16	.17		.05	.35	.12	.11	2.65	
Lock Haven	do	.02	T.			.02	.10	.30				.30														.20	.95			T.		3.08	
Marion	Potomac					T.	.08	.36				.35					.01			.13	.12				.07	1.45		.11	.27	.13		1.37	
Mauch Chunk	Delaware	T.				T.	.15	.24				.22	.02			T.				.05	.02				.05	.36		T.	.04	.19	.07	2.03	
Mifflintown	Junata	T.				.01	.30					.18	.04	T.			T.							T.	1.13		T.	.05	T.	.66		2.96	
Mifflord	Susquehanna	.20	.20	.10	T.				T.	T.	T.	.40	T.	T.			.10	T.	T.		.20	.10	T.	T.	.05	.65	T.	.30	T.	.09		1.93	
Montrose	Junata					.80					.10	.10								.02	.01				.20	T.			.15			2.42	
Mountain House	Susquehanna	.15		T.	T.	.35	T.				.30	.20													.10	1.00			.05		.04	1.95	
Muncy Valley	do				.25	.35						.10														.99						1.82	
New Germantown	Delaware					.14	.30				.17									.10	.03				.10	.97			.05		.12	2.55	
Ottsville	do	.01				.42	.02	.01			.13	.10								.01	.15				.10	.95		.10	.34	.28		3.97	
Philadelphia (1)	do	.10				.10	.70				.20														.12	.27			.01		.10	2.33	
Pocono Lake	do					.09	.54	.06			.21									.11					.12	.27			.05	.32	.10	3.32	
Point Pleasant	do					.13	.37				.23	.37	.04							.06	.07				.28	.73			.01	.16	.05	2.22	
Pottsville	Schuylkill	.08				.15	.29	.01			.23	.12								.09	.02				.28	.73			.06		.26	.24	2.34
Reading	do	.08				.15	.29	.01			.23	.12								.12					.12	.32			.07		.12	.04	3.35
Renova II	Susquehanna	.04	T.		.04			.10			.16									.12	.46				.20	.92			.17	T.	.05	1.71	
Scranton	do	.12		.03		.06	.73	.04			.12	.27	.01							.12	.46				.04	.99			.16		.05	2.48	
Selsholtzville	Schuylkill	.02			.14	.48	.02				.26									.12	.04				.05	.84			.17	T.	.02		1.87
Selsholtzville	Susquehanna	.02	T.			.02	.05	.02			.35									.07	.10				.05	.84			.17	T.	.02		2.07
Selsholtzville	Schuylkill	.03				.25	.35	.02			.25									.22						.12	.25				.11		3.31
Shawmont	Susquehanna					.10	.15				.21									.11					.11	.85			.06		.05	4.22	
Shippensburg	Schuylkill					.72					.26									.11	.02				.30	.46			.07	.14	.01	2.31	
Smiths Corners	do	.08	T.	T.	.02	.10	.27	.01	.01	T.	.15	.12	.16	.01		.01				.08	.13	T.	T.		.30	.46			.07	.14	.01	2.47	
Spring Mount	Susquehanna	.06	.04	T.	T.	T.	T.			T.	.35	.01	T.							.08	.13	T.	T.		.30	.46			.07	.14	.01	2.60	
State College	do	.06	.04	T.	T.	T.	T.			T.	.35	.01	T.							.08	.13	T.	T.		.30	.46			.07	.14	.01	2.95	
Towanda	do	.06	.04	T.	T.	T.	T.			T.	.35	.01	T.							.08	.13	T.	T.		.30	.46			.07	.14	.01	3.22	
Wellsboro	do	.06	.04	T.	T.	T.	T.			T.	.35	.01	T.							.08	.13	T.	T.		.30	.46			.07	.14	.01	2.94	
West Chester	Coast	.01				.27	.28	.08			.08	.23	.01							.11					.02	1.14			.10	.22	.20	2.30	
Wilkes Barre II	Susquehanna	.01	T.		T.			.16	.10		.16	.10								.01	.10				.02	1.14			.10	.22	.20	3.70	
Williamsport	do	T.		.04		.33					.26									.08	.04				.85			.04		.18		2.50	
New Jersey.																																	
Asbury Park	Coast			T.			.50	1.58			.50	T.								.46					T.	1.06			.12			3.32	
Atlantic City	do			T.			.57	1.28	.04		.09	.19								.53					T.	.99			.04			2.94	
Bayonne	do		T.	T.			.03	.60	.10		.15	.01								.27	T.				T.	.99			.04			2.47	
Belvidere	Delaware						.38				.23									.18	.04				T.	1.26			.07			2.60	
Bergen Point	Coast					.05	.70	.09			.25	T.								.28	T.				T.	1.03			.05	T.	.17	2.95	
Boonton	Passaic																																3.22
Bridgeton	Coast																																2.94
Burlington	Delaware	T.	T.			.50	.47				.26									.23	T.				T.	1.20			.02		.27	2.30	
Canton	Coast	T.	.02			* .90					.30									.44					T.	.78						2.94	
Cape May City	do	T.	T.		T.	.56	.54				.15	.11								.11	.44				T.	1.43		.05				3.70	
Charlotteburg	Passaic					.17					.38															.95	.25			.10		2.50	
Chatham	do						.35				.20															.95	.25			.10		2.50	
Clayton	Coast					.60	.20																										



TABLE 2.—Daily precipitation for December, 1910. District No. 1—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Maryland.																																	
Annapolis.	Coast.					T.	.60	1.10				.30	.51													.86					.10		3.47
Bachmans Valley.	do.	T.	T.			T.	.40	.80				.30	T.			T.									.14	.63			.03	.05		2.35	
Baltimore.	do.	T.	T.			T.	.50	.71				.13	T.			T.				.20			T.		.30	.53			T.	.08		2.45	
Cambridge.	do.					*	1.21					.10	T.							.16	.48				*	1.17				.31		3.43	
Cheltenham.	do.	T.				T.	.30	.90	.10			.15													T.	1.90				.02	.18		3.55
Chestertown.	do.					T.	.30	.22	.10																	1.10						1.78	
Cheswille.	Potomac.	T.	T.			T.	.16	.28				T.	.52		T.		T.			.01					.42	.32			T.	.02		1.73	
Clear Spring.	do.		.02	T.			.80	.10				.20	T.				T.			.10		T.			T.	.25	T.			T.		1.37	
Coleman.	do.						.30	.30				.30	.10													1.05				.11		2.35	
College Park.	do.					T.	.30	.25	.30			T.	T.				T.			.08						.85				.08		1.86	
Cumberland.	do.					T.	T.	.60	.15			.15					T.			T.						.50				T.		.60	2.40
Darlington.	Coast.	T.	T.			T.	.30	.45				T.	.30	T.			T.									1.29				T.	T.	.06	2.40
Denton.	do.						.34	.82	.17			.19									.31					T.	1.00					.10	2.32
Easton.	do.						.35	*	.72			.10							*	.28						.69					.12		2.93
Emmitsburg.	Potomac.	T.				T.	.30	.70				.25								.06					T.	T.					.09		1.40
Fallston.	Coast.	T.	T.			T.	.30	.40	.03			.20	.03				T.		T.		T.	.02	T.	T.		T.	1.15				.03		2.16
Frederick.	Potomac.	T.				.04	.50	.55	.15			.10								.18						.05	.63				.01		2.46
Frostburg.	do.	.03	T.	.01		.45	.00	.03				T.	.30	T.	T.		.04	.10		.12	T.	.10			.19	.26							2.24
Great Falls.	do.				.02		.10	.25				.10								.06						.09					.07		1.64
Green Spring Furnace.	do.	T.			.02	.50	.30	.70				.10	T.													.15	.60			.02			2.35
Keedysville.	do.				.02	.50	.30	.12				T.	.18							.05						.07	.63				.04		1.83
Lake Montebello.	Coast.	T.	T.			T.	.28	.32	.05			*	.17	T.	T.					T.	.02		T.			.02	.80				.01		1.87
Laurel.	do.				.10	.40	.70	.20				.20														T.	.25				T.	.40	2.25
Monrovia.	Potomac.	T.			.05	.45	.45	.06				T.	.10							.00						.01	.70				T.	.08	1.94
Pocomoke City.	Coast.				*	1.41	.22					.16	.16							.46						.48					.37		3.26
Porto Bello.	do.				T.	.20	.20													T.						1.60					T.		2.00
Princess Anne.	do.				T.	.20	1.26					.08	T.							.40						.73					.30		3.06
Salisbury.	Coast.	T.			T.	.60	.80	.10				.08								T.	.32					T.	.58				.31		2.79
Sanatorium.	Potomac.	.01	T.		.06	.25	.57	.45				.15	.29	T.				T.		.03	.28					.10	.90	T.			T.		2.78
Solomons.	Coast.	T.			T.	.45	.46	.10				.04														T.	.71				.12		3.08
Sudlersville.	do.	T.	T.		T.	.40	.60	.20				.30	.03							T.	.24					T.	1.15				.14		2.32
Takoma Park.	do.	T.			T.	.80	.20					.30								.09						.85					.08		1.53
Taneytown.	Potomac.	.01	T.		.05	.25	.43	.34				T.	.03							.02	.01					.34				.02	.03		2.24
Towson.	Coast.	T.	T.			.38	.83	.07				T.	*	.23						T.	.04	T.	T.			T.	.60				T.	.03	2.36
Van Bibber.	do.					.44	.52					T.	.23													.02	1.15						1.33
Westernport.	Potomac.	.02	T.			.38	.40					.05								.30	.02					.11	.05						1.95
Woodstock.	Coast.	T.	T.			T.	.43	.60				.15								T.						T.	.77				T.		
Delaware.																																	
Delaware City.	Coast.	T.	T.			T.	.30	.30	.10			.30								T.											T.		0.00
Dover.	do.	T.	T.			T.	.70	.20				.30	T.							1.00						T.	.25				T.	1.00	3.45
Millford.	do.					T.	.48	1.27	.36			.31	T.							.04	.41					T.	1.00	.02			T.	.24	4.13
Millsboro.	do.						.25	1.20	.40			.15								.22	.40					T.	.80				.31		3.79
Seaford.	do.	T.				T.	.30	.01	.19			.10	T.							.27						T.	.87					.17	2.51
District of Columbia.																																	
Washington.	Coast.	T.	T.			.01	.90	.49	T.			.19	T.							.06						.17	.73				T.	.09	2.64
Virginia.																																	
Culpeper.	Rappahannock.					T.	*	*	.96			.20								.01						.80							1.96
Dale Enterprise.	Shenandoah.					.01	.50	.50				.10										T.				.20	.72				.03		2.07
Doswell.	Pamunkey.								.16											.04	.31						1.05	.02			.80		3.77
Eastville.	Coast.				.01	.38	1.00	.16																			.85				.07		2.72
Fredericksburg.	Rappahannock.				T.	*	.99	.20				T.	.04								.18					T.	.85				.03		1.83
Lincoln.	Potomac.	T.				.15						.08														*	.22				.00		3.67
Mount Weather.	do.	T.	T.		.01	.70	1.90					.28	T.							.04						.18	.41				T.	.00	2.71
Quantico.	do.				*	1.35						.06								.30						.16							2.02
Staunton.	Shenandoah.				.03	.82	.18					.06								.08							.85				.05	T.	1.95
Stevens City.	Potomac.	T.			T.	.40	1.02	.02				.30			.01					T.							.02	.48					2.40
Warsaw.	Rappahannock.					.30		.30			.30																*	.90					
Woodstock.	Shenandoah.				.01	.35	.70	.15				.03	.04							T.							.01	.40					1.60



TABLE 3.—Maximum and minimum temperatures at selected stations for December, 1910. District No. 1, North Atlantic States.

Date.	Maine.												Concord, N. H.		Massachusetts.										Providence, R. I.				Connecticut.			
	Eastport.		Greenville.		Orono.		Portland.		Presque Isle.		Rumford.				Amherst.		Boston.		Middleboro.		Nantucket.		Cream Hill.						Hartford.			
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.			
1.....	37	32	30	26	35	29	35	30	32	27	35	30	33	26	36	25	40	31	40	30	42	32	38	30	30	25	38	30				
2.....	37	28	29	33	34	29	34	24	31	26	30	25	32	24	31	18	37	27	35	23	37	29	33	23	28	15	31	24				
3.....	28	19	23	15	32	22	31	20	26	17	26	20	28	20	34	12	36	24	33	17	34	26	33	20	34	19	34	24				
4.....	23	17	20	11	26	5	29	16	17	13	25	16	29	10	32	14	37	23	36	13	36	28	35	22	30	22	35	22				
5.....	17	12	11	6	22	8	21	12	14	4	18	4	22	11	25	13	27	16	26	12	33	26	29	17	28	10	31	18				
6.....	20	11	10	1	18	-6	13	6	12	1	15	-3	20	8	16	11	22	18	32	22	26	31	23	18	24	10	20	14				
7.....	23	18	12	2	20	6	24	9	13	8	24	2	29	11	34	14	31	16	32	15	36	25	30	17	20	8	29	16				
8.....	25	18	22	1	23	13	32	14	20	6	24	6	33	10	33	14	35	18	33	3	36	25	35	18	30	12	34	16				
9.....	22	8	15	2	22	3	23	10	14	5	17	6	21	12	22	8	27	14	25	7	32	20	25	10	22	9	26	14				
10.....	10	4	6	-2	17	-2	19	5	10	-10	13	5	16	5	24	2	22	9	30	-6	22	16	20	6	18	5	23	4				
11.....	29	5	17	-2	22	-9	20	5	21	-8	20	-4	21	-2	16	4	23	10	23	-6	32	19	21	9	20	8	18	10				
12.....	29	22	21	11	28	14	29	20	20	-12	28	10	32	12	28	8	33	18	31	17	38	28	32	17	19	6	29	12				
13.....	22	10	17	6	27	-3	29	18	15	-3	20	10	24	9	28	8	32	18	30	4	34	24	31	15	24	10	30	13				
14.....	32	8	20	1	37	2	33	16	23	-8	36	10	37	13	35	16	35	22	33	14	38	23	36	20	28	10	35	22				
15.....	37	5	32	3	36	22	38	8	27	2	37	6	37	3	36	7	37	9	37	28	42	22	38	12	30	14	36	12				
16.....	10	-3	7	-6	24	-4	15	3	21	-14	10	0	13	2	14	0	18	6	34	1	22	9	15	3	22	-5	16	3				
17.....	8	2	6	0	15	-6	18	6	8	-10	14	4	20	5	22	4	24	9	23	-11	28	13	24	7	19	-4	26	4				
18.....	33	4	19	-4	19	-18	24	5	12	-20	20	-2	32	6	34	17	38	22	38	1	40	25	39	19	33	-2	38	18				
19.....	43	33	38	9	42	13	39	20	35	-2	36	19	41	23	40	29	46	36	44	27	45	33	44	33	39	24	44	20				
20.....	39	31	33	20	40	25	39	29	32	10	36	19	36	21	44	22	41	31	39	21	42	31	40	28	32	21	36	27				
21.....	36	28	25	10	36	13	30	18	28	12	30	12	30	14	26	12	34	18	32	15	36	23	32	18	25	9	28	12				
22.....	28	13	20	0	30	6	24	12	20	0	18	7	23	3	28	8	27	14	24	12	28	21	26	13	18	2	28	10				
23.....	30	13	26	0	32	0	38	12	21	-1	24	2	35	-3	34	6	41	20	40	-1	40	22	40	13	28	11	39	13				
24.....	46	30	40	22	47	27	46	33	39	20	42	30	45	34	47	32	53	39	51	36	49	37	52	36	45	26	50	32				
25.....	45	14	32	4	46	20	34	13	37	15	33	8	34	12	32	16	39	20	47	28	37	25	36	22	26	15	32	20				
26.....	28	8	11	-4	31	1	21	12	15	-10	18	6	21	8	24	4	32	18	30	12	36	23	30	17	22	7	28	16				
27.....	35	28	25	8	25	13	30	19	24	0	26	16	34	18	35	23	41	32	40	22	43	31	40	26	38	18	40	28				
28.....	33	25	32	18	34	10	38	19	34	20	36	23	37	15	36	14	43	31	44	15	44	30	42	24	29	20	42	27				
29.....	42	32	32	26	36	29	40	34	29	25	36	32	37	33	41	34	50	39	53	35	48	41	50	39	50	29	48	37				
30.....	49	6	35	1	44	32	48	5	37	25	36	-1	49	1	46	8	55	12	52	31	49	18	53	12	41	12	49	11				
31.....	8	-4	1	-16	35	-7	15	0	32	-13	8	-7	16	-4	22	2	22	6	31	5	25	10	24	6	21	-3	24	5				
Mns.....	29.5	15.7	21.5	6.2	29.8	9.3	29.3	14.6	23.2	3.7	25.5	10.0	29.6	11.6	30.5	13.2	34.8	20.2	35.1	14.3	36.8	24.7	33.7	18.4	28.2	11.7	32.8	17.1				

Date.	New Haven, Conn.		New York.										Pennsylvania.										New York, N. J.					
	Addison.		Albany.		Binghamton.		Indian Lake.		Little Falls.		New York.		Everett.		Harrisburg.		Philadelphia.		Scranton.		State College.		Wellsville.		Asbury Park, N. J.			
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1.....	41	30	32	25	34	27	30	22	.....	12	31	20	39	29	32	24	36	30	38	31	32	24	31	24	32	23	43	30
2.....	34	24	29	17	29	23	23	21	.....	11	22	14	31	26	30	21	32	29	35	29	25	21	27	22	26	17	36	25
3.....	36	23	35	19	34	21	30	23	.....	13	28	16	36	26	32	22	36	26	38	32	33	24	30	22	33	22	38	28
4.....	36	24	35	23	34	20	32	24	.....	10	28	16	35	28	34	20	33	26	36	32	33	25	33	21	31	22	36	24
5.....	29	20	28	20	20	13	24	11	.....	-10	20	-2	33	25	31	21	30	26	33	24	28	20	33	18	30	21	38	28
6.....	23	17	24	12	18	10	21	10	.....	-14	16	4	29	22	24	20	28	22	27	20	25	17	26	17	23	11	34	24
7.....	29	19	27	13	18	10	23	11	.....	-20	14	0	30	20	28	18	32	20	31	24	24	14	25	5	26	11	30	18
8.....	36	18	30	20	33	16	27	18	.....	9	18	8	34	22	33	9	34	22	37	26	30	21	29	19	27	10	35	17
9.....	28	15	24	8	22	11	19	3	.....	0	19	2	27	19	24	-8	28	17	31	23	22	15	23	13	28	8	32	16
10.....	23	7	28	6	21	2	30	-2	.....	-28	21	-4	26	16	22	-6	25	8	26	19	26	8	20	2	26	7	24	7
11.....	20	13	24	17	14	6	19	10	.....	-21	11	0	24	18	32	5	27	17	25	21	22	17	28	2	25	15	30	20
12.....	29	15	28	8	19	6	19	9	.....	-30	12	-2	25	16	27	15	27	20	27	20	21	15	27	19	24	2	32	9
13.....	31	14	26	9	24	10	22	17	.....	-5	15	4	30	15	27	16	28	17	30	20	22	15	23	10	29	5	30	12
14.....	35	20	41	20	40	18	39	22	.....	8	33	13	36	22	40	26	38	22	38	22	37	15	35	20	38	19	35	12
15.....	40	10	37	18	40	5	32	3	.....	15	33	4	41	14	39	11	42	17	44	23	38	9	36	21	34	18	45	30
16.....	18	5	22	0	12	1	9	-3	.....	-10	5	-6	20	9	21	13	23	12	23	14	14	6	21	7	21	1	40	5
17.....	26	5	27	-9	24	3	24	-6	.....	-21	20	-1	27	10	35	-4	29	9	30	16	26	3	26	5	26	-3	27	4
18.....	40	19	41	3	36	20	37	9	.....	17	30	19	41	22	38	0	34	12	39	22	38	12	30	2	37	0	41	12
19.....	43	33	35	29	42	31	37	30	.....	21	34	26	41	31	34	31	36	27	42	32	38	30	35	27	33	26	40	36
20.....	35	27	31	21	31	25	30	18	.....	18	31	20	36	24	32	18	33	19	36	24	30	20	29	15	29	17	37	25
21.....	27	12	21	8	25	8	18	10	.....	30	18	0	24	17	21	14	22	18	26	20	20	12	18	12	21	8	32	16
22.....	29	11	33	0	19	5	24	10	.....	-13	22	-1	29	14	31	10	32	19	31	19	23	12	28	11	28	-6	30	14
23.....	41	17	36	17	33	8	40	19	.....	5	28	7	45	23	32	18	34	19	40	45	23	41	16	32	20	33	9	14
24.....	50	33	35	27	44	31	42	24	.....	33	38	26	48	31	35	28	38	28	50	35	45	26	36	23	34	26	.....	.....
25.....	34	20	27	12	31	13	24	7	.....	8	28	6																



TABLE 3.—Maximum and minimum temperatures at selected stations, December, 1910. District No. 1—Continued.

Date.	New Jersey.								Martinsburg, W. Va.	Maryland.								Millboro, Del.	Washington, D. C.				Virginia.					
	Atlantic City.		Hightstown.		Newton.		Phillipsburg.			Baltimore.		Darlington.		Frederick.		Westernport.			Culpeper.		Fredericksburg.		Staunton.					
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		Max.	Min.	Max.	Min.	Max.	Min.				
1....	39	30	39	28	.....	.....	38	28	35	28	38	31	36	26	37	29	30	24	40	29	39	30	40	25	42	24	37	24
2....	35	26	35	22	.....	.....	31	24	35	28	37	31	35	24	36	28	39	25	40	26	38	29	38	29	41	26	37	24
3....	38	28	38	22	.....	.....	35	23	36	26	39	29	36	23	37	25	31	22	41	25	38	27	37	15	39	18	37	14
4....	37	30	38	23	.....	.....	36	24	35	25	35	30	33	26	34	26	32	25	38	24	35	27	35	25	37	28	37	16
5....	36	28	35	21	.....	.....	29	19	33	28	33	27	33	22	30	25	32	24	40	26	33	27	33	23	33	24	31	24
6....	41	26	27	19	.....	.....	24	15	25	25	30	25	29	19	30	22	29	25	42	29	29	25	31	25	32	25	30	24
7....	31	23	30	18	.....	.....	28	13	33	24	35	26	32	20	32	22	28	23	37	20	35	22	35	10	37	18	33	9
8....	38	26	37	13	.....	.....	34	16	36	24	37	26	35	17	32	18	35	24	40	16	37	13	33	4	34	6	37	21
9....	31	17	28	10	.....	.....	27	11	25	16	30	17	28	9	26	13	30	10	33	15	28	11	27	5	32	6	31	4
10....	32	16	29	0	.....	.....	26	4	26	0	30	12	26	3	22	2	23	0	34	6	31	8	30	6	32	10	37	9
11....	35	19	24	19	.....	.....	21	13	35	9	35	25	37	3	32	21	34	20	37	25	37	26	32	13	32	21	41	14
12....	26	14	23	4	.....	.....	25	2	32	24	33	27	28	8	33	28	31	23	31	19	34	26	34	25	37	27	35	25
13....	29	16	32	10	.....	.....	29	14	31	16	31	19	26	9	29	18	27	17	31	15	31	21	32	13	33	18	37	7
14....	38	18	35	12	.....	.....	35	17	41	12	38	18	35	12	39	20	39	19	44	12	43	18	39	2	47	4	43	9
15....	45	23	40	23	.....	.....	42	22	44	28	47	23	42	23	43	25	39	29	51	32	49	26	47	30	50	33	47	25
16....	23	12	38	5	.....	.....	23	8	26	14	26	16	40	10	34	13	30	14	36	15	26	17	39	13	47	17	30	15
17....	31	11	29	2	.....	.....	27	5	29	9	33	14	28	4	28	4	32	3	36	10	34	12	32	5	37	9	35	9
18....	41	27	38	7	.....	.....	35	9	39	9	37	18	34	9	27	6	36	7	43	16	37	14	36	7	40	16	44	10
19....	42	34	41	34	.....	.....	38	30	37	10	42	35	40	32	38	26	39	29	45	31	41	32	42	28	42	32	38	30
20....	39	21	37	24	.....	.....	34	21	32	28	36	23	35	28	35	22	34	19	38	27	35	21	37	25	39	24	32	26
21....	27	17	27	15	.....	.....	21	14	25	17	28	19	28	14	26	16	22	15	30	17	28	18	27	11	31	17	28	17
22....	30	16	31	12	.....	.....	30	13	31	17	34	21	30	15	29	14	24	11	34	17	33	19	33	10	35	10	38	12
23....	44	22	38	15	.....	.....	37	16	36	17	43	28	33	18	33	19	34	26	47	16	44	26	36	20	36	21	40	28
24....	50	31	49	35	.....	.....	46	31	37	25	45	32	43	18	38	30	38	27	54	32	45	30	39	30	40	32	37	28
25....	35	24	38	27	.....	.....	31	19	32	25	34	26	32	26	31	25	30	16	35	24	32	23	33	22	36	25	37	20
26....	37	22	30	17	.....	.....	26	17	32	21	37	26	32	19	31	18	33	17	45	24	37	24	35	29	40	22	42	23
27....	42	31	42	21	.....	.....	39	21	44	19	47	30	44	19	42	19	48	27	50	21	47	23	43	18	48	22	49	22
28....	44	32	45	22	.....	.....	37	22	41	23	44	32	41	24	41	23	39	23	52	25	50	30	47	25	54	28	55	28
29....	46	39	50	34	.....	.....	44	34	50	27	56	38	49	35	47	34	48	35	64	41	62	41	59	36	67	45	69	40
30....	49	23	55	31	.....	.....	50	22	39	36	58	27	49	29	47	31	45	27	60	30	56	27	54	32	64	37	42	39
31....	33	16	31	12	.....	.....	28	9	33	18	31	20	30	14	40	18	34	15	31	19	33	21	35	17	38	19	36	17
Mns..	36.9	23.2	35.8	18.0	.....	.....	32.5	17.3	34.4	20.3	37.4	24.0	34.5	18.0	34.2	20.6	33.7	20.0	41.3	22.1	38.0	23.0	37.1	17.9	40.4	21.4	38.5	20.1



## Climatological Data for December, 1910.

## DISTRICT No. 2, SOUTH ATLANTIC AND EAST GULF STATES.

CHARLES F. VON HERRMANN, District Editor.

## GENERAL SUMMARY.

December was an unusually cold and relatively dry month; since the rainy periods were well defined and of brief duration there were many fine, clear days, and, generally speaking, the month was not unpleasant. The deficiency in temperature averaged over 4° for the district at large and resulted from the continuous though moderate degree of cold rather than from specially low minimum temperatures. In this respect the month was similar to December, 1909, and in several States was even colder. In North Carolina the mean temperature for the current month was the lowest December mean in 30 years excepting only December, 1903; in South Carolina it was the coldest December since 1876; in Georgia since 1891; and in Florida since 1891, excepting only December, 1903. At many individual stations the month was the coldest on record. The deficiency in temperature was least in the Mississippi area and increased toward the east and northeast to more than 6° below normal on the North Carolina and Virginia coasts. The precipitation was below normal in nearly all sections. In Florida and the southeastern portions of Georgia and South Carolina the total rainfall for the month was generally under 2 inches, over most of the remainder of the district it was from 2 to 4 inches, and was slightly over 4 inches only in limited areas in northwestern Georgia, southwestern Alabama, southeastern Mississippi, and central North Carolina. A little snow fell in northeastern Alabama and northern Georgia, and somewhat larger amounts in North Carolina and Virginia, generally occurring on the 4th to 6th.

Of the 9 or 10 areas of low atmospheric pressure which had more or less influence on the weather in the district during December only 2 passed directly over the section, both bringing fairly general rains in all States in the district. The first disturbance moved with great rapidity from the north Pacific coast on the morning of the 3d to northern Mississippi on the 5th, and thence to the Atlantic coast between Hatteras and Norfolk on the 6th, accompanied by general rains, which were heavy in northern Georgia, and by moderate amounts of snow in North Carolina and Virginia. Throughout the southern portion of the district the lowest atmospheric pressure occurred on the 5th, with a minimum of 29.49 inches at Birmingham, Ala. A long period of fair weather followed until the 18th and 19th, when light rains occurred in connection with a slight depression in the Gulf and a more marked disturbance in the lower Lake region, which gave the lowest pressure for the district in Virginia on the 20th, Norfolk reporting 29.47 inches. The second general storm passed over the district on the 23d and 24th, moving rapidly from the Texas coast to New England and leaving fine, clear weather for the Christmas holidays. A pronounced area of high pressure was central over the north Atlantic States on the 31st, with the highest atmospheric pressure for the district, 30.78 inches, at Norfolk, Va.

## TEMPERATURE.

The temperature was below the normal during the month over the entire district, with an average deficiency of over 4°. The State average temperature for Virginia was 6° below normal and for Florida 5° below. The greatest deficiency at any of the cooperative stations was 8° at Lexington, Va., which has a length of record of 34 years. On the other

hand, the average deficiency for the Mississippi area was but 3.5°, and at a few points in the extreme western portion of that area the temperature was slightly above the normal. With respect to continuous cold weather only December, 1903, and December, 1909, are comparable with the current month.

The average temperature for the district was 42°. The highest State average was 53.5° for Florida and the lowest was 33.4° for the Virginia area. At a few places in Virginia the monthly mean temperature was below the freezing point, namely, at Hot Springs, monthly mean 26.7°, Catawba, 31.6°, and Lexington, 27.6°; elsewhere in the district the means as a rule ranged between 35° and 45°, though in Florida it was warmer at several southern stations. The highest local monthly mean was 65.3°, at Key West, and it was above 60° also at Homestead, Jupiter, and Miami, Fla.

The month opened with temperatures considerably below normal, and at points in Florida and Mississippi the lowest temperatures for the month were registered on the 2d or 3d. During the rains of the 4th to 6th the temperature rose somewhat, and on the 5th the highest for the month was recorded at several places in Alabama. Subsequently a long period of cold weather prevailed until the 27th, broken only by somewhat warmer weather in Mississippi on the 10th. The lowest temperatures for the month generally occurred on the 21st or 22d, with the minimum for the district 4°, at Lexington, Va. The lowest in North Carolina was 8°, at Lenoir; in South Carolina 12°, at Society Hill; in Georgia 12°, at Lafayette; in Florida 19°, at Molino; in Alabama 11°, at Ashville, and in Mississippi 19°, at Waynesboro, Columbus, and Edinburg. The temperature was decidedly above the normal during only one brief period, extending from the 28th to the 30th, to the 31st in Florida, during which the highest temperatures exceeded 80° at a few points in Georgia and Florida. The highest temperature for the district was 85°, at Homestead and Malabar, Fla., on the 31st, closely followed by 83°, at Valdosta, Ga., on the 29th. Killing frosts or freezing temperatures extended southward into central Florida.

## PRECIPITATION.

The average precipitation for the district was 2.83 inches, which is 1.35 inches below the normal. December was relatively a very dry month, at some places the driest experienced in 20 years. The greatest deficiencies occurred in Georgia and Florida, Georgia receiving scarcely more than half the normal amount. Over most of Florida the rainfall was less than 2 inches. Over most of the remainder of the district the monthly amounts ranged between 2 and 4 inches, except over very limited areas, where the rainfall exceeded 4 inches, the most important of which are found in northern Georgia, extreme western Florida, and central North Carolina.

The rainfall occurred in well-defined periods from about the 4th to 7th, 18th to 19th, 23d to 24th, and 29th to 31st. The heaviest rains for the month occurred during the first period. The following large amounts occurred in northern Georgia: Dahlonega, 2.75 in 24 hours on the 4th-5th; Diamond, 3.10; Gainesville, 2.55; Gore, 3.45; Norcross, 2.52, all on the same date. Rock House, N. C., received 3.55 inches, Liberty, S. C., 2.25, and Newton, Ala., 2.92. The average number of days with rain was 6, ranging from 9 in Mississippi to only 4 in Florida.



During December, 1910, snow fell only on the 4th to 6th, generally in very small amounts, except in northern Virginia. The State average for Virginia was 3.4 inches, unmelted, for North Carolina 1 inch, and for the other States except Florida, where no snow fell, a trace. The largest monthly amount was 11 inches at Lassiter, Va., all of which fell on the 5th. In North Carolina the largest total snowfall was 3.5 inches, at Reidsville, Roxboro, Saxon, and Brewers. In northern Georgia and northern Alabama the largest amount did not exceed 2 inches. At some points sleet occurred in place of snow.

## RIVER CONDITIONS.

The area covered by the heavy rains of the 4th to 6th was so limited that only a very moderate rise in the rivers resulted. At all points throughout the district the rivers maintained very low stages and a very uniform flow. The water available for hydroelectric power was at a minimum during the first few days of the month and again toward the close.

## MISCELLANEOUS PHENOMENA.

The prevailing winds for the month were from the north in Alabama and Mississippi and from the northwest in all other sections. The wind movement was moderate, and but few of the regular stations reported gales of 40 miles an hour or more, namely, Atlanta, 47 miles from the west on the 20th, Savannah, 42 miles west on the same date, Pensacola, 52 miles from the southeast on the 22d, and Hatteras, 46 miles from the north on the 30th. The mean hourly wind movement exceeded 10 miles at Hatteras, Charleston, Atlanta, Savannah, Jupiter, Key West, and Pensacola. There were quite a large number of pleasant bright days during the month, the average number of clear days being 16, ranging from 20 in Florida to 11 in Mississippi. The number of partly cloudy days was 6, of cloudy days 9. No severe local storms of any kind were reported during December.

## BRIEF METEOROLOGICAL SUMMARY FOR THE YEAR 1910.

In some respects the year 1910 from a climatic standpoint was a noteworthy one throughout District No. 2. The temperature during January and February was continuously but moderately low, the precipitation was below the normal, and neither could be considered a severe winter month. A sudden change to warmer weather followed, and March was characterized by remarkably high temperatures and summerlike conditions. It was also very dry, some places experiencing the longest spring drought on record.

Spring and summer were decidedly cool. Killing frosts were general on April 26, an unusually late date. A unique feature of April weather was the snowstorm on the morning of April 25, during which snow fell to a depth of from 2 to 4 inches, unmelted, in northern Alabama and Georgia, and traces were received as far south as Pensacola, Fla. May was one of the coldest spring months experienced in many years. The deficiency in temperature continued during five consecutive months from April to August, inclusive, and during most of this period the precipitation was also below the normal, except in June.

September was warm and dry, with a high percentage of sunshine, but cold weather returned at the close of October and both November and December were decidedly cold. December was one of the coldest winter months ever experienced, comparable only with December, 1903, and December, 1909. In October, severe tropical hurricanes passed over Florida and the south Atlantic coast, and remarkably heavy rains were received in portions of Florida.

During many past winters in this region January and February have always been the coldest months, but during both 1909 and 1910 the period of greatest cold retreated to December.

## THE WATER-POWER RESOURCES OF GEORGIA.

By C. F. VON HERRMANN, District Editor.  
[Concluded from November Review.]

The earliest development of hydroelectric power in southern Georgia was made in 1905 by the Albany Power and Manufacturing Company at Albany, Ga. The power house and dam are located on Muchafonee Creek at Big Shoals. The dam, which is one of the best types of construction, holds back the water of three creeks for nearly 15 miles. About 3,000 horsepower are available at the average stage of the water. A much larger development is planned at Porters Shoals, 2½ miles above Albany, which is expected to develop 9,000 horsepower. The municipal lighting plant and street railway system at Albany are run by electric power as well as a number of manufacturing plants and cotton mills.

The following is a partial list of the most important shoals on the Flint River, north of the fall line, passing from north to south:

Stream and location.	Name of fall or shoal.	Length of shoal.	Fall.
Flint River:		Feet.	Feet.
Pike County.....	Flat Shoals.....	3,000	32
Upson County.....	Dripping Rock Shoals.....	3,900	14
Do.....	Yellow Jacket Shoal.....	3,400	37
Do.....	Snipes Shoals.....	3,350	12
Big Potato Creek:			
Upson County.....	Rogers Shoals.....	2,600	80
Do.....	Daniels Mills Shoals.....	150	13

The average rainfall for the Chattahoochee and Flint River basins and the mean river stages at West Point, Alaga, and Eufaula on the Chattahoochee and at Woodbury, Montezuma, Albany, and Bainbridge on the Flint River will be found in the table at the end of this article.

## THE ALTAMAHA SYSTEM.

The Altamaha River is formed by the union of the Oconee and Ocmulgee Rivers on the line between Montgomery and Appling Counties and pursues a southeasterly course, emptying into the Atlantic just below the city of Darien. Its length is about 131 miles by the river and it drains an area of 14,620 square miles. The total fall of the river from the point of union of the Ocmulgee and Oconee to Darien is 83 feet. The soil of this region is sandy and permeable, nevertheless the freshets on this river are sometimes of considerable magnitude. As the Altamaha lies entirely below the fall line, it furnishes no important water-power sites.

## THE OCONEE RIVER.

The Oconee River has its sources in Hall County near Gainesville, on the south side of the Chattahoochee Ridge, the stream proper being formed by the union of North Oconee and Middle Oconee, which unite just below the city of Athens. The river pursues a course a little east of south through a hilly region made up of cultivated ground interspersed by extensive tracts of forest. Below Milledgeville the river has a very tortuous course. The largest tributaries are the Apalachee and Little Rivers.

## Principal shoals on the Oconee River.

Stream and location.	Name of shoal or fall.	Length.	Fall.	Distance from Milledgeville.
		Feet.	Feet.	Miles.
North Oconee River:				
Jackson County.....	Hurricane Shoal.....	600	30	71
Do.....	Tumbling Shoals.....	600	8	.....
Clarke County.....	Athens Factory.....		12	60
Do.....	Georgia Factory.....	2,100	21	56
Middle Oconee River:				
Jackson County.....	Tallassee Bridge.....	3,600	33	67
Clarke County.....	McElroys Mills.....	2,600	23	62
Do.....	Princeton Factory.....		15	57
Apalachee River:				
Oconee County.....	High Shoals.....	600	50	50
Do.....	Furlows Shoals.....	4,200	26	42
Morgan County.....	Brices Shoals.....	900	19	40
Little River:				
Putnam County.....	Old Eatonton Factory.....	900	25	.....
Oconee River:				
Oconee County.....	Barnetts Shoals.....	4,000	54	63
Morgan County.....	Sculls Shoals.....		10	41
Do.....	Parks Mills.....		8	30
Putnam County.....	Long Shoals.....	1,300	12	23
Baldwin County.....	Milledgeville.....	26,000	34	.....



The power of the Oconee River is utilized by a large number of flour and grist mills, cotton mills, and smaller hydroelectric developments at Athens, Milledgeville, Eatonton, etc., which furnish light and power to nearby cities.

#### THE OCMULGEE RIVER.

The sources of the Ocmulgee River are found in Fulton and Dekalb counties not far from Atlanta, and the main stream is formed by the junction of the South and the Yellow Rivers, between Butts and Newton Counties. The river crosses the fall line near Macon, which is the head of navigation. The Ocmulgee drains an area of 6,000 square miles, of which 2,425 square miles are above Macon. Above Macon there are more than 25 important shoals, the longest of which are Lloyd Shoals, Roaches Shoal, Glovers Mill Shoals, and Seven Island Shoals, each capable of developing from 6,000 to 10,000 horsepower.

#### Principal shoals on the Ocmulgee River.

Stream and location.	Name of shoal or fall.	Length.	Fall.	Distance from Macon.
		Feet.	Feet.	Miles.
Yellow River:				
Rockdale County.....	Rockdale Paper Mills.....	3,365	46	67
Do.....	Glenn Shoals.....		12	64
Newton County.....	Bridge Shoals.....		4	
Do.....	Cedar Shoals.....	2,700	85	57
Do.....	Dried Indian Shoal.....	1,500	7	54
Do.....	Indian Fishery.....	825	13	49
South River:				
Dekalb County.....	Flat Shoals.....		24	65
Do.....	Albert Shoals.....		18	63
Newton County.....	Snapping Shoals.....	1,500	28	49
Do.....	Island Shoals.....	750	16	47
Do.....	Manns Bridge.....	3,000	10	45
Alcoy River:				
Newton County.....	White and Garners Shoals.....	3,800	85	
Towaliga River:				
Monroe County.....	High Falls.....	1,200	97	34
Ocmulgee River:				
Newton County.....	Barnes Shoals.....	1,300	14	40
Butts County.....	Keys Ferry.....	1,900	8	38
Do.....	Harpers Shoals.....	1,300	28	
Do.....	Lloyds and Capps Shoals.....	9,500		32
Do.....	Pitman Ferry.....	1,650	6	30
Do.....	Roaches Shoals.....	4,700	28	
Do.....	Lamars Shoals.....	1,000	20	
Monroe County.....	Glovers Shoals.....	4,000	16	22
Do.....	Danes Shoal.....	1,500	6	15
Do.....	Long Shoal.....	4,500	9	
Bibb County.....	Holton Shoals.....	3,900		
Do.....	Macon.....	10,000	40	

For a complete list of the shoals on the Oconee and Ocmulgee Rivers see the Twentieth Annual Report of the United States Geological Survey, 1898-99, Part IV, Hydrography, pages 166-168.

One of the most important and largest hydroelectric developments yet undertaken in the South is the project of the Central Georgia Power Co., of Macon, Ga. The dam and power house are located at Capps and Lloyds Shoals, near Flovilla, about 30 miles north of Macon. The dam creates a storage reservoir of 4,000 acres, extending about 15 miles up the Ocmulgee River and its tributaries. The dam which has just been completed is of cement and masonry about 1,500 feet long with abutments, one of the largest in the country, and provides for an effective head of 100 feet. Mr. Charles F. Howe, chief engineer of the company, states that four 4,000-horsepower generators directly connected to horizontal turbine units of sufficient capacity to permit of a 25 per cent overload have been installed and there is space for two other units of 4,000-horsepower capacity, making a total of 24,000 horsepower. The dam provides for a spillway approximately 750 feet long. Power is transmitted from the power house at a voltage of 66,000 by a double circuit of 3 wires each to Griffin, Forsyth, and Macon, and a circuit is in process of construction to Monticello, Ga. These four cities will be supplied with current to operate the electric-light plants, the street-car systems, factories of various sorts, etc. The plant will be in operation by the end of January, 1911.

#### THE MOBILE BASIN.

It will be seen from the chart (fig. 1), November, 1910, Review, that the Mobile Basin occupies a large portion of northwestern Georgia. The rivers of this region drain the southern slopes of the Blue Ridge Mountains, and flow through a hilly, broken country, generally well wooded and only partly under cultivation. There are many shoals and falls suitable for water-power sites that remain quite undeveloped. The following brief description is based on data contained in the Eighteenth Annual Report of the United States Geological Survey, 1896-97.

This area is designated the Mobile Basin because its waters enter the Gulf of Mexico through the Mobile River at Mobile, Ala. Beginning at the headwaters in Georgia the Cartecay and Ellijay Rivers unite at Ellijay to form the Coosawattee River. Just above Resaca this unites with the Consauga to form the Oostanaula River, and at Rome the Oostanaula joins the Etowah to form the Coosa River.

The important water powers in the basin are in the crystalline region or at the western fall line which passes through Carters on the Coosawattee and through Cartersville on the Etowah. The largest powers are on the Etowah River at Cartersville, where there is a fall of 80 feet, and the river has good shoals down to Rome and up to its headwaters. Near Dahlenega there is a fall of 100 feet in half a mile. The Amicalola River is the largest tributary of the Etowah. At Amicalola Falls the river drops 625 feet in less than half a mile. Heard Shoal in Dawson County has a fall of 234 feet. Fine and strong marble, which is extensively used for building purposes, is found in Pickens County where there are four large quarrying companies and several milling and finishing companies using waterpower easily obtained from the mountain streams of this section. All the power now used could be supplied electrically from Heard Shoals. At many points on the Etowah River power has been developed which is used to run grist mills, sawmills and gold stamp mills.

The following table gives for the most important rivers the mean river stages at all river stations and the normal rainfall over the watershed:

#### Mean river stages and normal precipitation.

Stations.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
Savannah River:													
Carlton.....	3.4	4.1	4.1	3.2	3.1	3.0	3.0	3.4	2.7	2.5	2.4	3.3	3.2
Calhoun Falls.....	2.6	4.2	4.1	3.4	3.3	3.4	3.3	3.3	3.3	2.8	2.6	3.5	3.4
Augusta.....	11.0	12.4	12.1	10.7	8.5	8.6	8.1	8.7	7.9	7.0	7.5	9.0	9.3
Normal rainfall.....	4.34	5.34	5.07	3.66	3.65	4.85	6.62	6.32	4.05	2.95	2.89	4.47	53.21
Chattahoochee River:													
Oakdale.....	7.5	8.9	9.9	8.2	7.7	7.5	7.0	7.1	6.2	5.6	5.4	7.2	7.4
West Point.....	4.4	6.0	6.3	5.0	4.1	3.9	3.6	3.7	2.9	2.6	2.8	4.3	4.1
Eufaula.....	7.2	11.7	11.9	8.2	6.3	4.4	4.3	5.4	3.4	2.3	2.5	6.1	6.1
Alaga.....	9.2	13.2	13.2	9.7	9.1	6.4	7.2	6.6	4.8	4.1	3.9	7.8	7.9
Normal rainfall.....	4.44	5.87	5.42	4.14	3.52	4.39	5.29	5.46	3.55	2.64	2.99	5.06	52.77
Flint River:													
Woodbury.....	1.6	2.7	2.5	1.6	1.2	.9	.9	1.3	.5	.2	.7	1.5	1.3
Montezuma.....	6.3	8.0	7.8	6.7	5.8	4.4	4.8	5.1	3.3	2.9	3.2	5.6	5.3
Albany.....	5.8	9.8	9.4	7.2	4.4	3.0	3.0	4.2	3.3	3.1	2.0	4.6	5.0
Bainbridge.....	7.0	10.6	11.3	8.4	7.1	4.9	5.2	6.1	4.3	3.6	3.2	5.4	6.4
Normal rainfall.....	3.75	5.92	5.01	3.77	3.34	4.16	5.37	5.88	3.29	2.49	2.59	4.49	50.06
Ocmulgee River:													
Macon.....	4.7	8.0	7.6	6.3	4.4	5.0	4.0	4.6	3.3	2.6	2.7	4.9	4.8
Abbeville.....	7.0	9.2	8.5	6.6	5.6	4.3	3.8	4.7	3.2	2.5	2.4	5.1	5.2
Oconee River:													
Milledgeville.....	5.4	7.4	6.7	5.1	4.1	4.2	4.2	5.2	3.2	2.8	3.0	5.2	4.7
Dublin.....	4.9	8.7	7.9	6.1	3.2	3.5	2.8	2.9	1.8	.9	1.1	3.6	4.0
Normal rainfall.....	4.10	5.29	5.08	3.52	3.17	4.25	4.95	5.40	3.40	2.37	2.76	4.24	48.53

#### REFERENCES.

1. Georgia: Her Resources and Possibilities, by R. T. Nesbitt, commissioner of agriculture of Georgia. Chapter IV, pages 127-156. 1896.
2. Bulletin No. 3-A. A Preliminary Report on the Water Powers of Georgia, by C. C. Anderson and B. M. Hall. 1896.
3. The National Magazine for August and September, 1909. Article "Glorious Old Georgia," by Garnaut Agassiz, pages 639 to 643.
4. The Water-Supply and Irrigation Papers, published by the United States Geological Survey, for the South Atlantic coast and eastern Gulf of Mexico.
5. The Annual Reports of the United States Geological Survey, especially the 18th to 22d Part IV, Hydrography.



TABLE 1.—Climatological data for December, 1910. District No. 2, South Atlantic and east Gulf States.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
Virginia.																				
Arvon.	Buckingham.	350	7	32.6	- 4.5	67	29	10	14	38	2.28	- 0.76	0.80	8.0	8	14	11	6	n.	Rev. P. F. Jones.
Ashland.	Hanover.	221	20	32.4	- 6.1	66	29	13	17	31	0.63	- 2.40	0.23	4.0	3	8	20	3	nw.	E. L. C. Scott.
Buchanan.	Botetourt.	820	7								1.38	- 1.74	0.72	4.5	6					D. D. Booz.
Callville.	Brunswick.	250	17																	F. M. Gage.
Cape Henry.	Princess Anne.	20	37	36.8	- 6.9	67	29	17	17	29	3.62	+ 0.19	1.57	0.2	8	13	5	13	nw.	U. S. Weather Bureau.
Catawba.	Roanoke.	1,750	1	31.6		61	29	14	17	25	2.57		0.72	5.2	7	9	17	5	n.	Charles Brauer.
Charlottesville.	Albemarle.	800	22	32.6	- 5.5	64	28	15	17	32	1.93	- 1.29	1.10	8.8	6	13	6	12	n.	Leander McCormick Obs.
Clarksville.	Mecklenburg.	17	17								4.42		1.60	2.2	8					J. Henry Ligon.
Columbia.	Fluvanna.	246	13	32.2		67	29	9	14	39	1.99	- 1.85	1.05	5.0	6	16	5	10	nw.	Chesapeake & Ohio R. R.
Danville.	Pittsylvania.	413	11								3.04		1.36	2.5	9					C. G. Watkins.
Diamond Springs.	Princess Anne.	20	1	36.4		67	29	14	17	42	4.07		1.16	0.2	10	20	2	9		Va. Expt. Station.
Hampton.	Elizabeth City.	5	28	36.6	- 5.5	61	29	20	17	24	4.05	+ 1.06	1.16	0.4	10	17	6	8	nw.	Hampton Institute.
Hot Springs.	Bath.	2,195	19	26.7	- 6.0	59	29	6	9	32	1.85	- 1.48	0.56	5.5	10	13	9	9		Dr. Kurt Linnert.
Ivor.	Southampton.	87	2			55	28				3.89		2.00		6					N. & W. Ry. Expt. Farm.
Lassiter.	Goochland.	100	1								2.24		1.10	11.0	3	23	4	4		T. J. Davis.
Lexington.	Rockbridge.	1,000	34	27.6	- 8.0	68	30	4	22	46	0.99	- 1.87	0.71	6.8	5	18	5	8		Va. Military Institute.
Lynchburg.	Campbell.	685	40	33.7	- 4.6	64	29	14	17	29	2.00	- 1.27	0.92	5.5	7	12	11	8	nw.	U. S. Weather Bureau.
Newcastle.	Craig.	1,300	2								2.14		1.07		8					Miss J. L. Martin.
Newport News.	Warwick.	55	8	38.1		64	29	18	17	27	4.44		1.24	T.	11	17	5	9	nw.	C. W. Ashby.
Norfolk.	Norfolk.	91	41	37.2	- 5.5	66	29	22	14	31	3.83	+ 0.43	1.59	0.5	8	16	5	10	n.	U. S. Weather Bureau.
Petersburg.	Dinwiddie.	60	24	36.1	- 4.1	68	29	15	17	31	3.93	+ 0.85	1.34	T.	5				w.	Central State Hospital.
Randolph.	Charlotte.	334	7								3.38		1.48	1.2	5					W. B. Spencer.
Richmond.	Henrico.	144	32	34.1	- 6.9	68	29	14	17	33	2.50	- 0.50	1.15	0.7	9	5	16	10	se.	U. S. Weather Bureau.
Rocky Mount.	Franklin.	1,150	17	32.6	- 7.4	61	29	11	17	34	2.56	- 0.92	0.82	3.5	8					G. W. B. Hale.
Saxe.	Charlotte.	350	8	34.0		67	28	9	22	39	3.02		1.70		4				nw.	State Experiment Farm.
Spottsville (near).	Surry.	15	23	34.8	- 5.9	68	29	11	22	32	3.81	+ 0.62	1.17	0.4	7	16	3	12	nw.	B. W. Jones.
Williamsburg.	James City.	70	20	35.0	- 6.5	67	29	13	17	34	2.72	- 2.10	1.05	2.0	7	14	8	9	nw.	Eastern State Hospital.
North Carolina.																				
Beaufort.	Carteret.	10	8	42.9		59	6	24	22	22	2.60		1.05	T.	10	21	2	8	nw.	H. D. Aller.
Belhaven.	Beaufort.	4	1	38.2		65	30	15	22	35	3.40		1.50	1.9	6	21	2	8	w.	W. S. Hopkins.
Brewers.	Wilkes.	1,950	13	35.6	- 3.4	61	29	10	22	45	4.11	- 0.28	1.38	3.5	6	13	12	6	w.	W. L. Brewer.
Caroleen.	Rutherford.	806	10	36.2	- 5.0	62	28	13	34	42	4.04	- 1.25	1.00	0.2	8	16	10	5	nw.	S. B. Tanner.
Chalybeate Springs.	Harnett.	500	4	36.7		69	30	12	14	39	3.71		1.17	1.0	8	18	6	7	n.	J. A. Smith.
Chapel Hill.	Orange.	500	52	38.0	- 4.2	67	29	15	22	37	4.20	+ 0.39	1.45	0.9	5	14	10	7	nw.	Prof. A. H. Patterson.
Charlotte.	Mecklenburg.	773	34	38.4	- 4.4	66	29	18	22	30	2.53	- 1.31	1.40	0.1	8	14	9	8	nw.	U. S. Weather Bureau.
Chimney Rock.	Rutherford.	1,150	1	36.9		57	15	18	15	39	4.28		1.43	1.0	8	21	4	6	w.	J. C. Michie.
Durham (near).	Durham.	406	1								4.46		1.51		7					J. T. Elliott.
Eagletown.	Northampton.	66	5	36.4		64	29	14	22	31	3.71		1.00	0.8	6	21	4	6	nw.	E. R. Conger.
Edenton.	Chowan.	30	16	37.8	- 5.2	62	29	16	17	33	3.40	- 0.16	1.40	T.	4	20	3	8	nw.	Prof. T. S. Inborden.
Enfield (near).	Halifax.	99									3.61		1.48	1.0	7					Frank Glover.
Fayetteville.	Cumberland.	170	23	40.6	- 3.1	69	29	17	22	33	2.87	- 1.81	1.36	T.	9					Mrs. N. B. Taylor.
Goldboro.	Wayne.	102	40	37.2	- 6.6	62	31	11	22	38	2.60	- 0.92	1.20	T.	6				n.	Dr. W. R. Goley.
Graham.	Alamance.	656	8								3.61		1.11	2.5	9					A. R. Horry.
Greensboro.	Gulford.	843	29	37.1	- 3.8	65	29	16	22	36	2.94	- 0.47	1.22	1.0	6				ne.	R. M. Hearn.
Greenville.	Pitt.	75	17								3.37		0.01	1.07	1.6	10				U. S. Weather Bureau.
Hatteras.	Dare.	11	36	42.6	- 6.2	65	24	28	22	30	2.39	- 2.72	1.07	0.0	6	19	4	8	nw.	E. Powell.
Henderson.	Vance.	508	17	36.2	- 4.5	63	29	17	22	33	4.84	+ 0.93	1.48	1.5	8	14	11	6	nw.	H. C. V. Peebles.
Kinston.	Lenoir.	46	12	40.2	- 3.7	70	28	14	14	40	2.65	- 0.05	1.17	T.	6	21	1	9	n.	G. M. Goforth.
Lenoir.	Caldwell.	1,186	37	33.9	- 4.7	60	29	8	22	46	3.66	+ 0.15	1.18	1.4	10	25	2	4	nw.	S. P. Houser.
Lincolnton.	Lincoln.	994	5	33.6		63	29	10	34	48	3.73		2.37	0.2	6	19	9	3	n.	T. B. Wilder.
Louisburg.	Franklin.	375	19	36.6	- 4.3	63	29	13	22	34	4.82	+ 1.42	1.69	T.	9	24	4	3	nw.	B. M. Davis.
Lumberton.	Robeson.	102	27	40.0	- 4.1	71	29	15	14	44	2.31	- 1.05	1.35	T.	9				nw.	U. S. Weather Bureau.
Manteo.	Dare.	12	5	38.8		63	30	17	17	32	2.58		1.28	0.0	5	19	6	6	nw.	Sergt. Thos. McGuire.
Marion.	McDowell.	1,425	18	36.0	- 4.4	62	29	12	22	45	5.34	+ 0.74	1.91	1.7	10	16	9	6	nw.	B. J. Utley.
Monroe.	Chatham.	145	16	36.3	- 5.5	69	29	10	22	42	3.77	+ 0.31	1.30	0.8	8	20	1	10	nw.	T. A. Ashcraft.
Monroeville.	Union.	586	16	38.4	- 4.2	68	29	12	3	33	3.35	- 0.12	0.85		6	18	2	11	sw.	H. D. Judd.
Morganton.	Burke.	1,135	23	35.4	- 6.1	62	29	11	34	42	3.70	- 0.19	1.03	0.2	6	21	5	5	w.	Prof. A. H. Merritt.
Mount Airy.	Surry.	1,048	22	34.2	- 4.5	62	29	10	14	41	3.45	- 0.12	0.90	1.7	9	20	5	6	nw.	J. W. Holland.
Mount Holly.	Gaston.	616	13								4.03	- 0.16	1.06	1.0	8				n.	J. B. Boddie.
Nashville.	Nash.	190	6	36.6		67	29	13	22	35	4.30		1.92	3.0	8	14	8	9	n.	James B. Hill.
Newbern.	Craven.	12	28	40.0	- 6.7	69	29	15	14	41	3.28	- 0.41	1.32	T.	6				nw.	Pinehurst General Office.
Pinehurst.	Moore.	650	6	40.2		69	29	18	22	32	3.42		1.29		9	18	5	8	w.	U. S. Weather Bureau.
Raleigh.	Wake.	390	39	37.9	- 4.8	65	29	20	22	29	3.65	+ 0.48	1.60	0.9	10	17	5	9	nw.	A. H. York.
Ramseur.	Randolph.	442	3	35.5		67	29	10	22	48	4.22		1.20	2.0	9	21	8	2	n.	J. R. Walton.
Randleman.	do.	810	5								3.38		1.09	1.1	9					E. M. Redd.
Reidsville.	Rockingham.	828	11	35.9	- 2.7	63	29	14	22	35	2.97	- 0.91	1.20	3.5	7	13	1	17	nw.	Barry C. Hawkins.
Rock House.	Macon.	3,100	18	33.4	- 6.1	54	27	10	21	27	6.90	- 0.27	3.55							



TABLE 1.—Climatological data for December, 1910. District No. 2—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.					Sky.					Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of overcast days.			
South Carolina—Cont'd.																					
Charleston.	Charleston.	48	40	45.6	-5.7	67	29	28	21	25	1.21	-1.94	0.69	0.0	5	15	8	8	w.	U. S. Weather Bureau.	
Cheraw.	Chesterfield.	144	22	40.3	-3.7	70	29	16	22	35	2.31	-0.82	0.96	0.0	10	19	6	6	w.	J. H. Powe.	
Clemson College.	Oconee.	850	19	38.8	-3.3	63	29	15	21	31	4.68	-0.12	1.70	0.0	5	24	0	7	nw.	Prof. John N. Hook.	
Columbia.	Richland.	351	23	42.4	-4.8	71	29	20	3	31	1.30	-1.00	0.51	0.0	7	16	9	6	w.	U. S. Weather Bureau.	
Conway.	Horry.	25	18	43.7	-4.0	72	20	18	14	39	1.41	-1.89	0.39	0.0	5	21	0	10	sw.	P. C. Quattlebaum.	
Dillon.	Dillon.	100	6	43.0	-3.2	71	29	14	14	40	2.18	-1.29	1.15	0.0	5	26	0	5	w.	A. E. Rowell.	
Effingham.	Florence.	106	18	43.0	-	70	29	17	22	44	2.39	-0.70	1.75	0.0	4	21	4	6	sw.	H. B. McCall.	
Ferguson.	Berkeley.	51	2	44.6	-	70	29	21	14	36	1.15	-2.54	0.35	0.0	4	21	2	7	w.	E. M. Gaillard.	
Greenville.	Greenville.	989	18	40.4	-0.2	67	27	17	14	44	4.56	+0.13	1.80	0.0	7	14	7	10	nw.	H. K. Gilbert.	
Greenwood.	Greenwood.	671	22	39.4	-3.0	69	29	18	23	36	3.47	-0.95	1.23	0.0	6	20	0	11	w.	A. P. Hazard.	
Heath Springs.	Lancaster.	368	9	39.4	-	66	29	14	22	32	2.80	-	1.30	0.0	5	22	6	3	w.	Mrs. S. A. Crittenden.	
Jacksonboro.	Colleton.	13	2	44.5	-	68	29	21	14	38	1.26	-	0.74	0.0	4	21	1	9	w.	M. M. Calhoun.	
Kingstree.	Williamsburg.	54	22	43.6	-3.6	70	28	20	3	35	1.32	-1.99	0.70	0.0	5	20	2	9	nw.	J. A. Weaver.	
Liberty.	Pickens.	900	16	38.5	-4.0	62	29	15	22	35	4.96	+0.12	2.25	0.1	5	21	5	5	w.	W. E. Haskell, Jr.	
Meriwether.	Edgefield.	302	1	43.1	-	72	31	17	22	43	1.36	-	0.56	0.0	3	16	5	6	w.	A. O. Matthews.	
Newberry.	Newberry.	302	6	40.6	-4.2	70	29	17	22	34	2.96	-0.67	1.04	0.0	9	13	9	9	w.	Jno. T. Boggs.	
Palmer.	Anderson.	873	5	40.8	-4.5	68	29	12	21	31	1.55	-1.67	0.90	0.0	7	19	4	8	w.	Wm. S. Middleton.	
Pinopolis.	Berkeley.	58	17	44.6	-	71	29	20	3	31	1.55	-1.67	0.90	0.0	4	21	6	4	w.	W. G. Peterson.	
St. George.	Dorchester.	109	22	44.6	-2.9	71	29	20	3	31	1.55	-1.67	0.90	0.0	3	29	0	2	w.	John M. Ward.	
St. Matthews.	Calhoun.	209	22	42.8	-3.3	69	29	22	14	33	2.27	-1.07	1.00	0.0	5	21	0	10	w.	Miss E. P. Ravenel.	
Santee.	Union.	512	15	39.0	-4.0	69	29	14	32	32	3.92	-0.10	1.55	0.0	7	15	11	5	w.	G. P. Lewis.	
Smith Mill.	Williamsburg.	62	15	40.8	-	68	29	12	21	31	1.55	-1.67	0.90	0.0	4	19	1	11	sw.	J. S. Wannamaker.	
Society Hill.	Darlington.	192	19	37.0	-5.2	64	28	15	22	33	3.67	-0.48	1.30	0.0	6	17	0	14	sw.	E. W. Jeter.	
Spartanburg.	Dorchester.	875	19	44.4	-3.8	71	29	19	14	34	1.65	-2.01	1.00	0.0	6	7	20	4	sw.	W. G. Walker.	
Summerville.	Edgefield.	75	13	42.9	-4.0	70	29	20	19	32	2.78	-1.26	0.96	0.0	6	16	10	5	sw.	Maj. J. J. Lucas.	
Trenton.	Colleton.	630	17	45.4	-	75	29	17	14	42	1.73	-	1.16	0.0	6	18	8	5	sw.	F. P. Robinson.	
Walterboro.	Fairfield.	545	21	39.7	-6.0	68	29	19	22	39	1.55	-1.56	0.70	0.0	4	24	5	2	sw.	Miss E. H. Gadsden.	
Windsboro.	York.	680	11	39.2	-7.1	67	29	16	22	29	3.15	-1.40	0.94	0.0	9	20	6	5	sw.	C. A. Long.	
Winthrop College.	Hampton.	23	18	42.2	-5.4	71	29	19	14	36	1.74	-1.83	0.75	0.0	6	16	0	15	sw.	J. A. Westerberg.	
Yemassee.																			John W. Seigler.		
Georgia.																					
Abbeville.	Wilcox.	772	7	37.6	-4.6	65	29	16	14	34	2.31	-1.18	1.61	0.0	5	19	0	12	w.	E. R. Rivers.	
Adairsville.	Bartow.	280	25	46.3	-5.3	73	28	23	3	36	2.24	-1.62	1.04	0.0	4	17	2	12	nw.	J. G. Hutson.	
Albany.	Dougherty.	293	21	47.4	-3.0	76	29	23	14	38	2.08	-1.73	0.68	0.0	5	7	17	7	nw.	W. H. Calhoun.	
Allapaha.	Berrien.	362	27	42.4	-7.4	72	29	23	14	42	2.64	-1.17	0.80	0.0	6	18	2	11	nw.	Dr. J. P. Bowdoin.	
Americus.	Sumter.	694	33	39.2	-4.6	66	29	18	21	35	3.22	-0.96	1.48	0.0	6	19	2	10	sw.	Geo. C. Bronan.	
Athens.	Clarke.	1,218	45	39.6	-4.5	66	29	19	21	26	2.79	-1.85	1.28	0.0	10	12	6	13	w.	James T. Austin.	
Atlanta.	Fulton.	180	44	43.4	-4.1	72	29	20	22	31	1.64	-1.97	0.52	0.0	7	15	10	6	w.	F. P. Harrold.	
Augusta.	Richmond.	119	18	47.0	-3.8	77	29	21	7	39	1.36	-2.88	0.80	0.0	5	21	0	10	n.	C. D. Cox.	
Bainbridge.	Decatur.	875	2	42.0	-	68	5	20	21	35	2.51	-1.28	0.0	0.0	6	14	9	8	w.	U. S. Weather Bureau.	
Barnesville.	Pike.	300	19	46.2	-4.7	80	29	20	3	42	2.32	-1.67	0.94	0.0	4	14	10	7	n.	Do.	
Blakely.	Early.	650	8	41.2	-4.5	69	29	17	3	41	2.05	-2.39	0.78	0.0	7	20	3	8	nw.	Mrs. C. O. Wimberley.	
Butler.	Taylor.	613	17	41.2	-4.5	69	29	17	3	41	2.05	-2.39	0.70	0.0	4	17	2	12	n.	Prof. T. O. Galloway.	
Camak.	Warren.	894	17	41.2	-4.5	69	29	17	3	41	2.05	-2.39	0.70	0.0	4	17	2	12	n.	Ralph M. Hobbs.	
Canton.	Cherokee.	557	11	35.8	-5.9	60	28	13	14	38	4.86	-1.70	2.25	0.0	5	14	4	13	w.	Mrs. Mamie F. Wallace.	
Carlton.	Madison.	2,100	17	35.8	-5.9	60	28	13	14	38	4.86	-1.70	2.25	0.0	5	17	7	7	w.	J. A. Chapman.	
Clayton.	Rabun.	262	23	43.0	-5.5	72	29	23	3	39	3.69	-1.42	0.90	0.0	9	14	6	11	nw.	G. W. Evans.	
Columbus.	Muscogee.	800	17	42.0	-	68	5	21	3	30	3.10	-1.40	1.05	0.0	6	16	7	8	nw.	M. C. Power.	
Covington.	Newton.	446	11	42.0	-	68	5	21	3	30	3.10	-1.40	1.05	0.0	6	16	7	8	nw.	A. J. Duncan.	
Cuthbert.	Randolph.	1,519	18	36.8	-5.3	60	29	17	13	31	5.29	-0.71	2.77	0.0	10	11	10	10	nw.	A. J. Land.	
Dahlonega.	Lumpkin.	2,020	20	36.4	-5.2	60	29	14	14	36	6.00	+0.51	3.10	0.0	9	12	6	13	nw.	Mrs. Sarah E. Cruse.	
Diamond.	Gilmer.	402	16	44.5	-	74	29	19	14	34	2.27	-0.84	0.0	0.0	7	19	5	7	nw.	Prof. W. McMichael.	
Dudley.	Laurens.	361	19	44.5	-2.4	74	29	19	14	34	2.27	-0.84	0.0	0.0	7	19	5	7	nw.	Prof. D. P. Gaillard.	
Eastman.	Dodge.	710	7	40.2	-5.1	65	29	14	21	31	3.33	-1.09	1.38	0.0	7	21	4	6	w.	R. A. Kimzey.	
Eatonville.	Putnam.	940	10	41.7	-3.6	65	5	22	21	28	2.68	-2.19	1.00	0.0	6	16	6	9	nw.	Mrs. M. E. Martin.	
Elberton.	Elbert.	166	23	44.4	-5.6	76	29	21	3	41	1.94	-2.92	1.35	0.0	3	17	0	14	nw.	J. H. A. O'Sullivan.	
Experiment.	Spalding.	1,254	34	35.8	-6.6	63	29	15	14	35	4.80	-0.17	2.55	0.0	7	25	0	6	w.	Miss A. M. Robinson.	
Fort Gaines.	Clay.	1,052	20	38.6	-6.8	64	29	16	21	31	4.04	+0.04	2.10	0.0	7	25	0	6	w.	Prof. W. C. Wright.	
Gainesville.	Hall.	1,052	20	38.6	-6.8	64	29	16	21	31	4.04	+0.04	2.10	0.0	7	25	0	6	w.	H. A. Roebuck.	
Gillsville.	do.	1,052	20	38.6	-6.8	64	29	16	21	31	4.04	+0.04	2.10	0.0	7	25	0	6	w.	Martin V. Calvin.	
Glenville.	Tatnall.	12	5	43.8	-	72	29	23	3	40	2.01	-	0.67	0.0	8	18	8	5	w.	Mrs. Eva T. Graham.	
Gore.	Chattooga.	598	8	41.0	-5.0	66	29	16	14	36	6.79	+0.83	3.45	2.0	8	11	9	10	a.	W. C. Walker.	
Greensboro.	Greene.	975	21	40.0	-5.0	66	29	16	14	37	2.87	-2.15	1.20	0.0	5	16	7	8	w.	J. W. Casey.	
Griffin.	Spalding.	245	12	42.6	-4.7																



TABLE 1.—Climatological data for October, 1910. District No. 2—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.			Sky.				Prevailing wind direction.	Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.			Number of partly cloudy days.	Number of overcast days.
Georgia—Continued.																				
Toccoa.	Stephens.	1,050	25	38.2	- 4.8	62	27	18	21	35	4.45	- 0.75	2.00	0.0	6	22	0	9	w.	Mrs. Alice Starke.
Valdosta.	Lowndes.	219	5	48.5		83	29	22	3	51	1.55		0.55	0.0	4	16	2	13	nw.	Miss Annie Twitty.
Valona.	McIntosh.	10	10	46.4	- 4.6	74	29	21	22	35	1.01	- 1.81	0.56	0.0	2	28	1	2	nw.	J. M. Atwood.
Washington.	Wilkes.	630	23	40.5	- 4.3	70	29	19	21	33	3.10	- 0.82	0.76	0.0	6	22	2	7	nw.	Miss Ella B. Smith.
Waycross.	Ware.	131	21	47.6	- 3.8	78	29	23	22	45	1.83	- 0.88	0.70	0.0	6	25	0	6	nw.	Thomas Sasser.
Waynesboro.	Burke.	86	19	43.6	- 4.0	74	29	17	31	39	1.46	- 1.96	0.55	0.0	4	24	3	4	nw.	Mrs. H. W. Blount.
West Point.	Troup.	620	22	40.0	- 6.1	67	29	20	31	36	3.14	- 2.35	1.20	0.0	8	13	4	14	nw.	E. N. Dunn.
Florida.																				
Apalachicola.	Franklin.	24	5	51.0		71	18	29	7	32	2.56		1.12	0.0	3				s.	G. H. Whiteside.
Arcadia.	De Soto.	61	8	56.0		81	30	28	31	39	0.64		0.15	0.0	9	23	4	4	nw.	C. S. Bushnell.
Archer.	Alachua.	92	24	52.0	- 5.3	79	29	25	3	42	0.29	- 2.96	0.22	0.0	3				nw.	R. B. Hodgson.
Avon Park.	De Soto.	150	11	56.8	- 5.4	83	30	29	3	40	0.62	- 1.61	0.30	0.0	5	20	8	3	ne.	O. R. Thatcher.
Bartow.	Polk.	115	13	54.4	- 6.8	82	30	26	3	41	0.81	- 1.54	0.35	0.0	5	14	16	1	ne.	Wm. Hood.
Bonifay.	Holmes.	111	8	48.1		71	27	20	3	40	2.47		1.15	0.0	3				nw.	Wm. Rush.
Brooksville.	Hernando.	126	17	55.4	- 3.6	81	29	28	3	38	0.27	- 2.08	0.15	0.0	2	24	6	1	w.	C. C. Peck.
Carrabelle.	Franklin.	10	13																s.	J. J. Blomquist.
Cedar Keys.	Levy.	10	12	52.2	- 6.3	76	29	32	2	26	0.49	- 1.97	0.49	0.0	1				nw.	J. B. Lutterloh.
Clermont.	Lake.	105	16	56.2	- 4.9	81	30	33	21	35	1.05	- 1.40	0.55	0.0	2	20	6	5	nw.	S. S. Feiler.
De Funiak Springs.	Walton.	193	14																nw.	R. W. Storrs.
De Land.	Volusia.	27	13	52.1	- 6.2	79	30	24	3	37	0.63		0.35	0.0	6				nw.	O. B. Webster.
Eustis.	Lake.	56	17	54.8	- 5.0	79	29	29	22	40	0.77	- 1.51	0.38	0.0	4	25	5	1	w.	C. T. Smith.
Federal Point.	Putnam.	5	17	52.8	- 4.3	80	29	30	22	36	0.98	- 1.69	0.50	0.0	7	21	8	2	ne.	E. S. Hubbard.
Fenholloway.	Taylor.	75	3	48.6		76	29	23	3	41	1.09		1.09	0.0	1				nw.	Miss E. Wigglesworth.
Fernandina.	Nassau.	10	12	50.8	- 5.7	76	30	30	2	28	0.82	- 2.64	0.42	0.0	3	20	10	1	ne.	W. B. C. Duryee.
Fort Meade.	Polk.	125	17	55.2	- 4.7	84	30	24	3	44	0.25	- 2.07	0.25	0.0	1	23	6	2	nw.	G. L. Brodick.
Fort Myers.	Lee.	12	17	58.7	- 5.5	80	31	36	4	28	0.34	- 1.18	0.18	0.0	3	24	7	0	nw.	Miss M. M. Gardner.
Fort Pierce.	St. Lucie.	6	18	58.0	- 6.7	81	30	34	21	39	0.20	- 2.03	0.20	0.0	1	25	2	4	nw.	T. J. O'Brien.
Gainesville.	Alachua.	176	23	52.0	- 4.5	77	30	26	2	32	0.70	- 1.92	0.46	0.0	5	22	0	9	nw.	J. P. H. Bell.
Grasmere.	Orange.	175	13	54.0	- 5.1	79	30	27	3	37	0.56		0.40	0.0	4	25	2	4	nw.	J. B. Escott.
Hilliard.	Nassau.	69	1	49.3		78	31	24	31	41	0.75		0.45	0.0	3	23	6	2	nw.	The Hilliard Co.
Homestead.	Dade.	5		61.0		85	31	31	3	36	0.35		0.29	0.0	3	23	6	2	ne.	W. J. Krome.
Inverness.	Citrus.	43	8	51.6		77	30	28	41	37	0.89	- 1.58	0.42	0.0	3	11	12	8	nw.	W. H. Miller.
Jacksonville.	Duval.	101	40	50.8	- 4.4	75	29	29	2	27	1.07	- 1.92	0.43	0.0	7	17	10	4	nw.	U. S. Weather Bureau.
Jasper.	Hamilton.	152	11																nw.	Mrs. W. C. Caldwell.
Johnstown.	Bradford.	125	14	51.1	- 3.3	78	29	24	31	40	0.65	- 1.97	0.36	0.0	5	21	6	4	nw.	A. M. C. Brasch.
Jupiter.	Palma Beach.	34	23	61.0	- 3.3	82	30	36	2	27	1.11	- 1.76	0.80	0.0	5	12	16	3	nw.	U. S. Weather Bureau.
Key West.	Monroe.	14	40	65.3	- 4.8	78	18	51	4	17	0.18	- 1.66	0.11	0.0	3	18	12	1	ne.	Do.
Kissimmee.	Osceola.	65	17	56.6	- 4.2	80	30	29	2	34	0.65	- 1.90	0.65	0.0	1	16	11	4	ne.	J. A. Simpson.
Lake City.	Columbia.	210	20	51.3	- 4.9	76	29	25	21	44	0.52	- 3.10	0.32	0.0	2	30	7	4	nw.	W. B. Knight.
Live Oak.	Suwanee.	109	8			79	30				1.60	- 0.84	0.70	0.0	6	21	0	10	nw.	J. D. Henry.
Macclenny.	Baker.	125	13	49.2	- 5.1	74	23	22	31	42	0.34	- 2.84	0.22	0.0	3				nw.	Griffing Bros. Co.
Madison.	Madison.	200	6	47.6		76	29	26	24	40	1.34	- 2.65	0.54	0.0	6	16	6	9	nw.	E. J. Vann.
Malabar.	Brevard.	24	8	57.0		85	31	30	2	39	0.33		0.17	0.0	5	23	6	2	n.	J. F. Farley.
Manatee.	Manatee.	8	17	55.4	- 6.4	76	29	32	4	33	0.95	- 1.43	0.33	0.0	5	24	7	0	nw.	H. H. Ten Broeck.
Marianna.	Jackson.	80	9			77	30	23	2	23	1.91		0.75	0.0	3	16	6	9	nw.	W. J. Watson.
Merritts Island.	Brevard.	20	30	56.4	- 6.6	77	30	35	2	30	0.42	- 2.05	0.30	0.0	4				ne.	F. Ulrich.
Miami.	Dade.	5	13	63.3	- 5.4	80	31	37	3	26	0.55	- 1.64	0.55	0.0	1	24	6	1	nw.	E. V. Blackman.
Miami (Subtrop. Gar.).	do.	5																	nw.	J. L. Hickson.
Middleburg.	Clay.	10	8	49.6		78	29	22	31	46	0.70		0.50	0.0	2				n.	G. A. Chalker.
Molokai.	Escambia.	49	8	48.7		80	5	19	3	44	6.57		2.40	0.0	5	19	1	11	n.	W. H. Trimmer.
Mount Pleasant.	Gadsden.	260	5	48.3		76	29	21	3	42	1.49		0.50	0.0	5				n.	Miss Addie Grubb.
Newport.	Wakulla.	2	8	47.4		72	27	24	31	41	0.85	- 4.10	0.85	0.0	1	19	0	12	n.	J. M. Ladd.
New Smyrna.	Volusia.	9	21	55.4	- 4.5	82	30	29	2	37	0.66	- 1.88	0.31	0.0	5				n.	F. Nordman.
Ocala.	Marion.	98	22	52.4	- 5.5	79	29	26	3	43	0.94	- 1.41	0.47	0.0	4				w.	F. T. Schreiber.
Orange City.	Volusia.	39	19	52.4	- 6.9	84	28	24	3	41	1.03	- 0.91	0.43	0.0	4	20	10	1	n.	J. D. Graham.
Orlando.	Orange.	111	17	55.8	- 4.4	82	30	29	3	37	0.80	- 1.28	0.60	0.0	3	20	5	6	ne.	James Thomson.
Pensacola.	Escambia.	149	32	50.6	- 3.3	68	5	28	2	23	5.22	+ 1.05	2.69	0.0	8	14	3	14	ne.	U. S. Weather Bureau.
Plant City.	Hillsboro.	121	17	54.6	- 5.9	82	30	29	3	41	0.84	- 1.42	0.40	0.0	3	24	7	0	nw.	E. B. Trask.
Rockledge.	Brevard.	28	1	55.4		78	31	30	2	33	0.48		0.48	0.0	1	23	6	2	nw.	Rev. J. H. White.
St. Andrew.	Washington.	14	14	49.9	- 2.8	73	29	27	21	36	2.00	- 2.69	1.11	0.0	6				w.	W. A. Emmons.
St. Augustine.	St. Johns.	10	50	52.7	- 4.9	78	29	28	21	31	1.19	- 1.38	0.63	0.0	3	15	6	10	e.	J. R. Palmer.
St. Leo.	Pasco.	140	14	54.2	- 5.4	78	29	31	3	32	0.80	- 1.95	0.47	0.0	4	20	7	4	w.	G. Schneider.
Satsuma Heights.	Putnam.	98	1	50.9		76	30	27	21	34	1.50		0.70	0.0	5	22	8	1	ne.	The Satsuma Co.
Switzerland.	St. Johns.	10	13	51.2	- 3.8	77	29	28	31	35	1.52	- 1.36	1.52	0.0	1				n.	W. C. Steele.
Tallahassee.	Leon.	192	24	47.7	- 5.3	72	29	25	2	30	1.80	- 2.96	0.65	0.0	4	19	4	8	n.	W. H. Markham.
Tampa.	Hillsboro.	79	21	55.5	- 4.0	77	29	34	8	28	1.05	- 0.97	0.64	0.0	4	19	7	5	n.	U. S. Weather Bureau.
Tarpon Springs.	do.	20	16	55.0	- 4.8	78	29	30	31	40	1.18	- 1.10	0.62	0.0	3	25	1	5	w.	A. P. Albaugh.
Titusville&gt																				



TABLE 1.—Climatological data for December, 1910. District No. 2—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast days.	Prevailing wind direction.
Alabama—Continued.																				
Lock No. 4	Talladega	510	13	40.5	- 2.9	69	5	18	21	35	3.32	- 1.24	1.54	0.0	8	15	0	13	n.	U. S. Engineers.
Maple Grove	Cherokee	17	17	37.9	- 4.3	69	5	17	20	36	3.68	- 1.53	1.45	0.0	9	12	7	12	nw.	Mrs. A. L. Awbrey.
Mentone	DeKalb	1,595	3								4.93		2.92	0.2	6	19	3	9	nw.	E. Mason.
Milstead	Macon		7								3.42		0.94	0.0	8	12	9	10	ne.	Evie Oswalt.
Mobile	Mobile	57	38	51.0	- 0.5	73	5	29	2	24	3.78	- 0.79	2.06	0.0	8	12	7	12	n.	U. S. Weather Bureau.
Montgomery	Montgomery	240	38	45.2	- 3.9	72	29	25	3	33	3.43	- 1.07	1.34	T.	6	14	4	13	nw.	Do.
Newbern	Hale		17	45.0	- 2.1	72	5†	21	2	32	3.25	- 1.19	1.09	0.0	8	16	10	5	n.	Dr. J. Huggins.
Oneonta	Blount	857	16	37.8	- 4.6	63	29	12	24	34	3.34	- 1.69	1.25	T.	11	9	4	18	n.	Aquilla J. Ketchum.
Opelika	Lee	817	31	42.0	- 4.7	68	29	23	2†	29	3.82	- 1.13	1.20	0.0	7	14	4	13	n.	A. H. Read, Jr.
Oriskany	Dale	400	8	40.2		71	29	30	3	31	3.05		1.00	0.0	6	20	5	6	n.	Miss Lucy Sellers.
Prattville	Autauga	281	10	43.2	- 3.3	72	5†	19	3	40	3.32	- 2.23	0.72	0.0	7	16	6	9	n.	Jos. B. Bell.
Pushmataha	Choctaw		19	47.0†	- 0.9	73	28	23	2†	38	3.49	- 2.23	0.85	0.0	7	14	5	12	nw.	W. N. Horn.
Selma	Dallas	147	30	43.2	- 3.7	75	5	21	3	40	4.06	- 0.52	0.84	0.0	10	11	8	12	w.	Charles F. Brislin.
Spring Hill	Mobile	312	6	49.8		74	5†	28	2†	29	4.61		2.36	0.0	9	13	11	7	n.	Spring Hill College.
Tallapoosa	Elmore		19								3.57	- 1.66	1.06	0.0	8	11	2	18	nw.	P. A. Noble.
Thomasville	Clarke	365	19	44.0	- 4.4	73	5	30	3†	41	3.43	- 0.10	0.97	0.0	7	16	1	14	e.	J. G. Forster.
Troy	Pike	281	2	46.5		74	29	24	3†	32	3.03		1.06	0.0	10	12	8	11	nw.	F. L. Zimmermann.
Tuscaloosa	Tuscaloosa	230	29	41.1	- 5.1	75	5	21	3	52	4.51	- 0.53	1.14	0.0	11	17	1	13	se.	W. S. Wyman, Jr.
Tuskegee	Macon		10	44.6	- 3.6	71	5†	21	3	36	2.75	- 3.27	0.77	0.0	5	9	10	12	n.	Prof. Geo. W. Carver.
Union Springs	Bullock	216	23	43.5	- 4.0	72	29	23	2†	31	3.54	- 1.41	0.60	0.0	7	15	8	8	w.	P. L. Cowan.
Uniontown	Perry	273	24	45.6	- 3.4	73	5	21	2	37	3.23	- 1.03	0.62	0.0	7	14	7	10	nw.	F. D. Stevens.
Valley Head	DeKalb	1,031	25	37.8	- 3.6	62	28†	12	21	37	2.87	- 1.97	2.00	2.0	5	14	8	9	n.	M. T. Floyd, M. D.
Wetumpka	Elmore	205	18	45.3	- 2.2	72	5†	21	3	39	3.53	- 1.28	1.08	0.0	8	14	0	17	n.	U. S. Engineers.
Mississippi.																				
Aberdeen	Monroe	210	22	41.4	- 1.4	71	29	19	21	36	2.96	- 2.15	1.66	0.0	5	15	4	12	n.	L. D. Godfrey, Jr.
Agricultural College	Okfuskeba	424	20	43.8	- 3.2	72	29	20	21	40	3.00	- 1.32	1.85	0.0	10	10	10	11	n.	J. R. Ricks.
Bay St. Louis	Hancock	28	17	51.6	- 0.7	72	5	24	7	29	4.00	- 1.16	1.69	0.0	10	10	6	15	e.	Brother Stanislaus.
Biloxi	Harrison	24	19	51.4	- 0.7	69	28	26	7	26	3.37	- 1.80	1.92	0.0	7	12	4	15	nw.	Miss M. Josie Pope.
Booneville	Prentiss	504	16	39.5	- 5.1	65	28	20	21	23	4.20	- 0.89	1.36	0.8	9	12	14	5	n.	Dr. D. T. Price.
Brookhaven	Lincoln	500	22	48.1	- 2.2	74	28	23	7	40	3.63	- 1.38	1.45	0.0	9	11	6	14	a.	W. J. Bee.
Columbia	Marion	110	6								3.38		1.24	0.0	11	11	5	15	sw.	N. R. Drummond.
Columbus	Lowndes	191	22	41.8	- 3.8	73	29	18	21	40	2.96	- 2.12	1.36	T.	9	13	0	18	nw.	J. B. Love.
Crystal Springs	Copiah	408	18	47.1	- 1.3	73	28	23	2†	36	3.89	- 1.64	1.55	0.0	10	9	6	16	n.	D. H. Miller.
Edinburg	Leake		2	43.7		73	29	18	2	35	3.94		1.96	0.0	10	13	2	16	n.	J. Y. Blocker.
Enterprise	Clarke	248	5								4.62		1.50	0.0	12	10	2	19	ne.	J. B. Thompson.
Fulton	Itawamba		1								3.94		1.16	0.0	8	10	5	16	n.	A. L. Summers.
Hattiesburg	Forest	189	17	49.2	- 1.9	78	10†	20	2	46	2.86	- 1.66	1.22	0.0	8	10	2	19	n.	T. C. Spence.
Haslehurst	Copiah	400	20	47.8	- 0.8	72	28	23	7†	39	4.28	- 0.94	1.58	0.0	8	10	6	15	a.	J. D. Granberry.
Hickory	Newton	326									4.50		1.25	0.0	7					A. C. Halley.
Jackson	Hinds	280	23	48.2	+ 0.7	74	27	22	7	37	3.69	- 0.84	1.81	0.0	13	9	10	12	se.	B. H. Klyce.
Lake	Scott	446	22	44.3†	- 2.3	72	28†	20*	2†	34*	4.77	+ 0.39	1.70	0.0	5	12	2	17	nw.	Mrs. Eddie McNeel.
Laurel	Jones	241	6	48.6		75	28	23	2	31	5.19		1.20	0.0	10	10	7	14	nw.	Thos. W. Flynt.
Leakesville	Greene		16	51.0	+ 0.4	78	10	22	2	42	4.83	- 0.59	1.68	0.0	7	8†	12†	9†		Dr. Sam Pool.
Louisville	Winston	561	21	44.8	- 2.8	71	29	20	3†	33	3.14	- 1.56	2.00	0.0	8					B. T. Webster.
McNeill	Pearl River	230	7	51.8		74	28	23	7	34*	3.65		1.70	0.0	7	10	15	6	se.	Prof. E. B. Ferris.
Macon	Noxubee	185	22	41.4	- 4.9	74	29	19	3	40*	3.09	- 1.36	1.35	T.	9	14†	4†	11†	se.	Finis E. Carleton.
Magnolia	Pike	415	14	50.3	- 0.2	74	28	22	2†	34	3.30	- 2.32	1.02	0.0	9	8	4	19	nw.	Miss Ruby V. Roberts.
Meridian	Lauderdale	375	20	45.4	- 1.5	73	28	23	3	31	4.60	- 0.61	1.36	T.	11	10	7	14	nw.	U. S. Weather Bureau.
Merrill	Greene	76	5								4.46		1.50	0.0	8	11	2	18	n.	L. C. Helms.
Monticello	Lawrence	200	3	48.7		77	28	19	2	37	3.56		1.12	0.0	11	4	8	19	nw.	Dr. G. A. Teunisson.
Okolona	Chickasaw	311	22	40.2	- 3.6	68	28	19	21	42	3.75	- 0.56	1.60	0.5	7	10	4	17	n.	D. H. Shell.
Pascagoula	Jackson	15	1	50.6		68	5	25	7	26	3.71		1.75	0.0	7	13	7	11		Frederick Hess.
Pearlington	Hancock	10	22	51.4	- 1.3	76	5	22	2	33	3.56	- 0.89	1.68	0.0	6	11	2	18	ne.	Miss Annette Koch.
Shubuta	Clarke	197	5								4.18		1.38	0.0	12	10	6	15	n.	Geo. A. Floyd.
Waynesboro	Wayne	191	25	46.5	- 2.3	74	5†	18	2	47	2.99	- 1.54	1.15	T.	7	16	0	15	n.	R. S. Burke.
Woodland	Chickasaw		1								3.21		1.83	0.0	6					Tallahatchie Drg. Com.
Louisiana.																				
Pearl River	St. Tammany		5								3.61		1.34	0.0	12	13	8	10	n.	Geo. F. Bancks.
Sheridan	Washington										2.01		0.60	0.0	7					D. A. Self.

\* b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

† Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.

† Also on other dates.

‡ Separate dates of falls not recorded.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

|| Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

¶ Estimated by observer.

||| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.



TABLE 2.—Daily precipitation for December, 1910. District No. 2, South Atlantic and east Gulf States.

TABLE 2.—Daily precipitation for December, 1910. District No. 1, South Atlantic Division.																																		
Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Virginia.																																		
Arvonla.	James.				.01	.80	.35	.20			T.	.03							.05					T.	.78						.06		2.28	
Ashland.	do.				T.	.20	.20	.20											T.	.23				T.	.35						.05		0.63	
Buchanan	do.				T.	.16	.72	.06											.03	.04					.74						1.00		1.38	
Cape Henry.	Coast.				.02	.79	.78	T.			.04	T.							.07					.12	.59							2.57		
Catawba.	James.				.50	.52	.72				.05													.05								1.93		
Charlottesville.	do.				.02	.61	1.10	.05			.10														1.34						.48		4.92	
Clarksville	Roanoke.				.22	.25	1.60	.10			.08													.70							.07		3.04	
Columbia.	James.				* 1.05						.09								.08					.01	.51						.32		4.07	
Danville	Roanoke.				.20	.31	1.36	.06			.06								.02	.23				.88	.08						1.06		4.05	
Diamond Springs.	Coast.				.03	.53	1.16	.03			.05								.02	.29				.83	.05						.98		1.85	
Hampton.	do.				.04	.57	1.16	.04			.07								.02	.29				.12	.56						.78		3.89	
Hot Springs	James.			.05	.06	.25	.45	.07											T.	.10	.01				2.00						.10		2.24	
Ivor.	Chowan.				* 1.75																			.92							.05		0.99	
Lassiter.	James.				T.	1.10	T.	T.												.22				.03	.20						.15		2.00	
Lexington.	do.				* .71														.11					.43	.20								2.14	
Lynchburg.	do.				.06	.85	.17												.04	.36				.05	.23						.19		4.44	
Newcastle	do.				.18	.09	1.07	.09											.03	.36				T.	1.12	.02					.91	.02	3.83	
Newport News.	Coast.				T.	.63	1.24	.03			.06								.01	.22					.97							.96		3.93
Norfolk.	do.				.04	.81	.79	T.			.03								T.	.32				T.	1.34						.34		3.38	
Petersburg.	James.				.130	.65	.30												T.	.32				T.	1.12						.28		2.50	
Randolph	Roanoke.				.08	.10	1.48												.16	.07				.13	.73						.19		2.56	
Richmond.	James.				T.	.83	.36	.01			.02									.07				.21	.80						.15		3.02	
Rocky Mount.	Roanoke.				.10	.37	.82	.05												.06				.12	.10						.48		3.81	
Saxe.	do.				.50	.72	1.70												.20	.20				1.17							.65		2.72	
Spotsville (near).	Chowan.				.02	1.04	.08												.10					.25										
Williamsburg.	James.				.02	.55	1.05	.10																.02	1.05	.19					.03	.48	2.60	
North Carolina.																																		
Beaufort.	Bogue Sound.				T.	.02	.13				.21									.45				.02	1.05	.19					.03	.48	2.60	
Belhaven.	Pungo.				.19	.38													.12	.02				.39	.11						.40		4.11	
Brewers.	Pedee.				.135	.84					T.													.38							.27		4.04	
Caroleen.	Santee.				.10	.93	.97	.03											.31					1.00	.43						.63		3.71	
Chalybeate Springs.	Cape Fear.				.10	.55	1.17	.01			.05								T.	.18					.02						.55		4.20	
Chapel Hill.	do.				.80	1.03	T.												.22	.37					.54	.03					.20		2.53	
Charlotte.	Santee.				.03	1.39	.11	T.			.01								.34					1.30	.13						.32		4.28	
Chimney Rock.	do.				.02	1.33	.82				.13								.50					1.45							.72		4.46	
Durham (near)	Neuse.				.15	.55	.96												T.	.17				T.	1.00						.80		3.71	
Eagletown.	Chowan.				.07	.67	1.00																	1.20							.40		3.40	
Edenton.	Albemarle Sound.				T.	.40																									.35	.25	3.61	
Enfield (near)	Tar.				.12	.06	1.48												T.	.07				.98	.38						.06	.36	2.57	
Fayetteville	Cape Fear.				T.	.12	.45	.03											T.	.28					1.20						.30		2.60	
Goldsboro	Neuse.				T.	.10	.70	.02												.23				.09	.96						.65		3.61	
Graham	Cape Fear.				.17	.25	1.11	.03												.22					.75						.53		2.94	
Greensboro	do.				.10	.12	.22													.65					.56	.51					.04	.54	3.37	
Greenville	Tar.				.10	.17	.74	.01											.59	.24				T.	1.07						.12	T.	2.39	
Hatteras.	Pamlico Sound.				T.	.17					.20								.14	.76				1.46							.72		4.84	
Henderson.	Tar & Roanoke.				.18	.13	.48	.04			.06								T.	.47	T.			1.17	.02						.47		2.65	
Kinston.	Neuse.				T.	.13	.39												.10	.04	.01			* 1.18							.35		3.73	
Lenoir.	Santee.				.18	.85	.90				.05								.01					1.10							.23		3.66	
Lincolnton.	do.				.02	* 2.37													.25					1.19	.50						.67	.08	4.82	
Louisburg	Tar.				.25	.08	1.62				.18								.04	.20				1.09	.26						.02	.30	2.31	
Lumberton	Lumber.				T.	.15	.22				.03													1.28							.37		5.34	
Manteo.	Roanoke Sound.				.22	.22	.24				.01	.61							.10		.01			.82	.48						.53		3.77	
Marion.	Santee.				.02	1.01	1.91				.02									.22				1.26	T.						.34		3.35	
Moncure	Cape Fear.				.08	.31	1.30	.05											.29	.30				.77							.30		3.70	
Monroe.	Pedee.					.80	.85												.12	.03				.93	.75						.34		3.45	
Morganston.	Santee.				T.	.84	1.03	T.			.04								.14	T.				.32	.71						.42		4.03	
Mount Airy.	Pedee.				.12	.86	.90	.02												.15					.65						.50	.06	4.30	
Mount Holly	Santee.				.10	.80	1.06	.06											.14	.80					1.10	.18					.60	.59	3.28	
Nashville	Tar.				.28	T.	1.32	T.												.45				1.32	.41									



TABLE 2.—Daily precipitation for December, 1910. District No. 2—Continued.

Stations.	River basins.	Day of month.																															Total	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
South Carolina—Con.																																		
Ferguson	Santee					.83														.09						.98	.20						2.10	
Florence	Pedee				.10	.16						T.																					2.39	
Georgetown	Ocean				.10														.35						.30	.20							.38	
Greenville	Saluda				1.80	.95													.30	.10					.64	.45	.32						1.15	
Greenwood	do				1.23	.98													.21	.30													3.46	
Heath Springs	Watauga				1.30														.34							.90	.06						2.80	
Jacksonboro	Ocean				T.	.08													T.	.40							.74						2.26	
Kingstree	Black					.05														.25						.70	.15				.04		1.32	
Liberty	Savannah		.01		.50	2.25					T.								.10						1.75								4.96	
Meriwether	do				.47	.56					T.																						1.33	
Newberry	Saluda		1.04		.77						.02	.03							.32	.10						.10	.38						2.93	
Pelzer	do				1.58	1.26													.22	.18					.02	.90							4.33	
Pinopolis	Cooper																		.29							.24	.06						0.66	
St. George	Edisto																		.50							.90	.15						1.55	
St. Matthews	Santee				.10														1.00	.16						.81							2.27	
Santuck	Broad				1.12	1.53					T.								.27	.17						.10	.45						3.92	
Smith Mills	Pedee				T.	.08													T.	.49								.78					1.58	
Society Hill	do				.23	.40				.03									.07	.21						1.05	.15						4.22	
Spartanburg	Broad				1.10	1.30					T.								.26	.11						.78							3.67	
Summerville	Ashley				T.	.10													.07	.35						.06	1.00						2.65	
Trenton	Edisto				.55	.38					T.								T.	.51						.16	.80						1.78	
Walterboro	Ashpeoo				.01	.17					T.								.08	.26							1.16						1.73	
Winnboro	Broad				.30	T.					.05								.50	T.						.70	T.						1.55	
Winthrop College	Catawba				.85	.94		.04			T.	.03							.25	.10						.04	.50						3.15	
Yemassee	Combahee		.03	.20															T.	.54						.75	.17						.74	
Georgia.																																		
Abbeville	Ocmulgee				T.	.36					T.								.93	.08						.68							2.31	
Adairsville	Coosa				1.61	1.05	T.												.20														3.68	
Albany	Flint					.30													1.04						T.	.54							2.24	
Allapaha	Allapaha					.29													.57	.30						.68							2.08	
Americus	Flint					.60						.10							.75	.05						.39							2.64	
Athens	Oconee				1.48	.35													.31	.05						.68							3.22	
Atlanta	Chattahoochee		1.04	.43	T.					.02	.01								.18						T.	.48							2.79	
Augusta	Savannah		.07	.47						T.									.20					T.	.29	.06					.49	.02	.05	
Bainbridge	Flint					.17					.05								.58	T.						.80							1.64	
Barnesville	do		.04	1.28	.15														.57														1.36	
Blakely	Chattahoochee				T.					.16			T.						.94					T.		.38							2.51	
Butler	Flint				.32	.78					.25								.50	.30						.33							2.32	
Camak	Savannah				.42	.70																				.70							3.21	
Canton	Coosa				1.70	.92													.40														2.05	
Carlton	Savannah				T.	.49	.43				.04								.23	.05													4.28	
Clayton	do				T.	.35	.56				T.								.29					T.									3.04	
Columbus	Chattahoochee				T.	.63	.43				.03	.47	T.	T.					.43	.22					1.50	.08	.50						4.86	
Covington	Ocmulgee				1.08	.20					.10								.35							.65							3.69	
Dahlonega	Chattahoochee				12.2	.77	.76				.08								.31							.81	.06						5.29	
Diamond	Tennessee		T.		T.	.3	1.0	.80			.02								.25					T.		1.07	.02				.01	.06	.31	6.00
Dublin	Oconee				T.	.08	.60				.08								.66	.34						.60	T.						3.20	
Dudley	do				T.	.06	.36				.05								.84	.05					T.	.35							2.27	
Eastman	Ocmulgee				T.	.28					.06								.93	.16						.68							2.49	
Easton	Oconee				.94	.30					.05								.56	.16						.68							2.49	
Elberton	Savannah				T.	1.38	.60				T.	.05							.50							.26	.11						2.74	
Experiment	Chattahoochee				1.00	.32					.08								.50							.30	.15						3.33	
Fort Gaines	do				1.00	.30					.08								.28							.50							2.68	
Gainesville	do				2.55	.47					.06								.20	.05													1.94	
Gillsville	Oconee				2.10	.47					T.								.28							.70							4.80	
Glennville	Altamaha				.34					.05									.11								.11						4.04	
Gore	Coosa		.22	.45	.27					.01			T.						.17	.48						.67	.06						2.01	
Greensboro	Oconee				.72	.65													1.00	1.00						.31							6.79	
Griffin	Chattahoochee				1.20	.30						.10							.32							.38							2.87	
Harrison	Ogeechee				.17	.25					.04								.95							.60							3.07	
Hawkinsville	Ocmulgee				.04	.08						.50	.01						.72	.06						.52							2.61	
Helena	do					.28					.01	.02	T.						.95	.05						.02	.66						2.55	
Lafayette	Tennessee		.27	.41	.13																					.39							1.15	
Lisbon	Savannah				.92	.75					T.	.01							.30							.18	.08						2.44	
Lost Mountain	Chattahoochee		.40	1.40						.30									.10														3.05	
Louisville	Ogeechee				.38																					.50							2.02	
Lumber City	Ocmulgee					.30						.06							.10	1.12						.70	.10						4.2	
Lumpkin	Chattahoochee				1.20						.17								.81														2.58	
Macon	Ocmulgee		.49	.62							.10								.05							.38							3.41	
Marshallville	Flint				.18	.84					T.	.22							.53							.37	.04						2.77	
Milledgeville	Oconee				.46	.72						.05							.61	.05						.50							3.15	
Millen	Ogeechee					.40													.36	.32						.40							2.91	
Montezuma	Flint				.06	1.52					T.	.68							.30	.40			</											



TABLE 2.—Daily precipitation for December, 1910. District No. 2—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Florida—Continued.																																		
Brooksville.....	Withlacoochee						.15												.12														0.27	
Carrabelle.....	Coast		.28																.45											.24	.10		1.07	
Cedar Keys.....	do.																								.49								0.49	
Clermont.....	Lake					.58																		.50								1.05		
De Land.....	St. Johns					.05														.05				.35					.02	.02	.14		0.63	
Eustis  ..	Lake				.06														.12					.38						.21		0.77		
Federal Point.....	St. Johns					.05													.03	.02				.50					.03		.05	.30	0.98	
Fenholloway.....	Fenholloway																																1.09	
Fernandina.....	Coast					.12												T.						.28									0.82	
Fort Meade.....	Peace Creek					T.													T.				.05	.25							T.		0.25	
Fort Myers.....	Caloosabatchee																	.18						.11					T.	T.			0.32	
Fort Pierce.....	Indian																			T.				.20									0.32	
Gainesville  ..	Lake					.02												.04	.21					.46									.03	
Grasmere.....	do.					.10												.05						.40						.01	T.		.56	
Hilliard.....	Nassau					.20																		.45							.10		.75	
Homestead.....	Coast																							.29						.05		.01	.35	
Inverness  ..	Withlacoochee					.15														.32				.42									.89	
Jacksonville.....	St. Johns					.07					T.	.03							.08					.27	.12					.07	.43		1.07	
Johnstown.....	Suwanee					.12													.05					.36						.08	.04		0.65	
Jupiter.....	Coast																	.04			.01			.80						.03	.16	.07	1.11	
Key West.....	do.					T.													T.					T.					.03	.04		.11	0.18	
Kissimmee.....	Kissimmee					T.																		.65									.65	
Lake City.....	Suwanee										T.							.20	T.					.32								T.	.52	
Live Oak  ..	do.					.30												.10	.15					.70						.15	.20		1.60	
Macclenny.....	St. Marys																	.22												.02	.10		.34	
Madison  ..	Suwanee					.54						.02						.06	.15					.47						.12			1.34	
Malabar.....	Indian																	.06						.33	.10					T.	.07		0.95	
Manatee.....	Manatee					.07												.25		.20				.33	.10								.56	1.81
Marianna  ..	Apalachicola																	.60						.75							.56		0.42	
Merritts Island.....	Indian													T.				.03						.30						.08	.03	T.		0.55
Miami.....	Coast													T.										.55									0.70	
Middleburg.....	St. Johns																							.80							.20		0.67	
Molino.....	Escambia					.52					1.45							1.65						2.40						.55			1.40	
Mount Pleasant.....	Apalachicola					T.	.19				T.							.20						.50	.40								0.85	
Newport.....	St. Marks					.85													T.														0.66	
New Smyrna.....	Coast					.04																		.31			.07				.06			0.94
Ocala  ..	St. Johns					.12																												1.03
Orange City.....	do.																							.43						.12				0.80
Orlando.....	do.					.10																			.60									0.84
Pensacola.....	Coast				T.	.16					.48	.01	T.					2.67	.02					.83						1.03	.02			0.84
Plant City.....	Hillsboro					.12												.32							.48									0.48
Rockledge.....	Indian																							.41	.29								.43	2.60
St. Andrew.....	Coast					.00						.27							1.11															1.19
St. Augustine.....	do.					T.																			.45						.11	.63		0.80
St. Leo.....	Withlacoochee					.04													.26						.47						.03			1.50
Satsuma Heights.....	St. Johns					.09													.09						.55						.07	.70		1.52
Switzerland.....	do.																																	1.52
Tallahassee  ..	Ocklocknee					.35													T.	.50					.65									1.80
Tampa.....	Coast					.04							T.						.37	T.				.28	.36									1.05
Tarpon Springs.....	do.					.05													.51						.62									1.18
Titusville.....	Indian																			.05						.40						.20	.06	0.80
Alabama.																																		
Alaga  ..	Chattahoochee					T.	.78				T.	T.							1.00						.66						1.02			3.46
Aniston.....	Coosa					1.80	.61	T.				.01							.23	.06					.42					.43		.04		3.61
Ashville.....	do.					.96	1.67	T.				.06							.20															2.89
Auburn.....	Tallapoosa					1.08	.53					.51	.01						.65					T.	.40	.02					.60			3.80
Benton  ..	Alabama						.34	.04					.39						.26						.34					.39				1.76
Bermuda.....	Escambia					.21	.15					.10		T.					.56					1.45						.47				3.29
Birmingham.....	Black Warrior					.86	.39	T.				T.	T.						.26	.08					.28	.10				.60	T.	.08		2.55
Calera  ..	Coosa						.80					.42							.54						.15	.10					.60			2.69
Camp Hill.....	Tallapoosa						.10					.40							.54						.68						.97			3.55
Cedar Bluff.....	Coosa					.20	.25	.10	.05															.30						.65				2.87
Citronelle.....	Alabama					.32	.16					.11		.07					.55	.01				.67						.10	.53			4.43
Clanton  ..	Coosa					.14	.42	.43				.40	.06						.57	.06					.15	.27					1.25			2.17
Cordova.....	Black Warrior					.57	.38																	.77						.40	.05	T.		4.07
Cullman.....	do.	T.				.42	.25	.03				.05												.61						.40		.04		4.04
Dadeville  ..	Tallapoosa						.16	.30				.13	.05						.65					.26	.15						.85			5.93
Daphne.....	Gulf of Mexico					.10	.31					.21		T.					.16					2.30						.20				3.74
Demopolis  ..	Tombigbee						.92	.18				.22	.06						.64					.72	.10					.90				3.28
Eufaula  ..	Chattahoochee						.20	.68				.06	.24						.92	.06					.44						.78			2.15
Evergreen.....	Escambia					.15							.15						.15						1.70									2.60
Flomaton.....	do.					.12																												



TABLE 2.—Daily precipitation for December, 1910. District No. 3—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<b>Mississippi.</b>																																		
Aberdeen[]	Tombigbee					.74	.10				T.					T.								1.66	.10			T.			.36		2.96	
Agricultural College	do.				.15	.10							.10			.10		.20	.10					1.85				.10		.25	.05	T.	3.00	
Bay Saint Louis	Mississippi Sound				.09	.54					.21	.36					.02		.63	.05				1.69						.12	.29		4.00	
Biloxi	do.				.21	.05					.04						.02		.32					1.92							.81		3.37	
Booneville	Tombigbee				.21	1.20	.07											T.	.03	.01				1.36				.15	.01		1.06		4.20	
Brookhaven[]	Pearl				.83	.05				.05	.05							T.			T.	.25	.20	1.45							.70		3.63	
Columbia[]	do.				.18	.18	.22				.02	.02	.08	.12	T.			.44	.32					1.24						T.	.56		3.38	
Columbus[]	Tombigbee				T.	.22	.32				.10						.08	.10	.38	T.				1.36	.24				T.	T.		.26		2.96
Crystal Springs[]	Pearl				.88						.24			.13	.02		.02	.16	.34					1.55	.03						.52		3.89	
Edinburg	do.				.07	.40	.14				.16			.08			.13	.53						1.96							.43		.04	3.94
Enterprise[]	Chickasawhay				.10	1.00	.08				.12	.04		.02			T.	.10	.00	1.50				.80	.12						.68		4.62	
Fulton[]	Tombigbee				1.00	.60													.04	T.				1.16	.22			.16		.04	.72		3.94	
Hattiesburg[]	Leaf				.22	.08												.46	.34					1.02	.20					.32	.22		2.86	
Hazlehurst[]	Pearl				.11	1.24					.15		T.					.24	.47					.04	1.58						.43		4.28	
Hickory[]	Chickasawhay				1.25	.25					T.	.09	.18		.10	.01		.05	.73	.00				.90							.70		4.50	
Jackson	Pearl				.32	.17					.18			.10	.01		.04	T.	.51	.02				.07	1.74					T.	.40	T.	.04	3.69
Lake[]	do.				1.10	.10													1.12					1.70							.75		4.77	
Laurel	Leaf				.27	.46					T.	.24		.08	T.	T.		T.						T.	1.20					1.01	.18	.01	5.19	
Leakesville[]	Chickasawhay					.20						.30						.25	1.08					1.68						.20	1.12		4.83	
Louisville	Pearl				.22	.12											.11	.28	.12					2.00				.01		.28			3.14	
McNeill	do.				.12	.20					.35		.10	T.				.78						1.70						.40			3.65	
Macon[]	Tombigbee				.38	.38	.12	T.				.04			.03				.50	.03				1.35	.12					.52			3.05	
Magnolia	Pearl				.24	.22					T.	.07		.20				T.	.54	.40				T.	1.02					.46	.05		3.30	
Meridian	Chickasawhay				1.33	.14	T.				.03	.07		T.				.08	1.32	.04				.14	.66					.75		.04	4.00	
Merrill[]	Pascagoula				T.	.16	.26					.10		.10					1.50					1.40	.48					T.	.40		4.46	
Monticello	Pearl				.50	.80					.01		.03				T.	T.	T.	.52	.08			T.	1.12					.04	.40	.04	.02	3.56
Okolona[]	Tombigbee				T.	.97	.05											T.		.23				1.60				.13		.05	.72		3.75	
Pascagoula	Pascagoula Bay				.20														.51	.44	.01			1.75	.15						.65		3.71	
Pearlington	Pearl					.76					.16	.06							.60	.06				1.68							.30		3.56	
Shubuta[]	Chickasawhay					.32	1.06				.18	.06					.02		.16	.72	.04			1.02	.02					.08	.50		4.18	
Waynesboro[]	do.				T.	.22	.12				.15	T.		T.				.20	.55				T.	1.15	T.					T.	.60		2.99	
Woodland	Tombigbee				.82												.05		.07					1.83						.37		.07	3.21	
<b>Louisiana.</b>																																		
Pearl River[]	Pearl				.08	.04	.04				.01		.40		T.			.04	.28	.72	T.				1.28	.06					.12	.54		3.61
Sheridan	do.				.30	.60													.30	.30					.40				.10	.01			2.01	



Date.	Virginia.								North Carolina.																		Charleston, S. C.	
	Lynchburg.		Norfolk.		Richmond.		Saxe.		Charlotte.		Edenton.		Fayetteville.		Hatteras.		Newbern. §§		Raleigh.		Reidsville.		Salisbury.		Wilmington.			
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		
1....	37	27	42	26	41	27	42	23	41	24	47	27	45	25	41	34	45	22	39	26	37	24	44	24	42	26	40	30
2....	36	28	40	29	40	36	42	20	39	21	46	26	43	24	46	33	46	20	40	25	41	21	43	19	43	27	43	29
3....	38	24	39	30	39	19	42	11	30	20	40	20	45	21	47	33	48	17	40	24	44	18	43	16	44	25	45	30
4....	41	28	36	32	38	28	42	29	49	31	46	25	53	32	42	34	48	25	43	30	43	28	50	31	51	34	54	37
5....	32	28	46	31	34	28	35	28	53	38	45	27	50	35	61	36	63	29	45	32	40	32	52	31	65	41	64	50
6....	32	29	48	29	34	27	35	23	39	33	48	30	59	39	64	39	62	39	39	32	34	29	46	34	66	39	64	39
7....	35	28	41	29	41	25	39	20	43	28	50	32	48	30	46	35	46	28	43	31	43	26	45	26	48	34	47	31
8....	38	25	47	31	44	25	48	20	50	28	45	24	54	26	51	42	54	25	50	29	50	25	52	26	56	32	55	33
9....	38	18	37	30	35	24	46	17	51	32	50	20	52	27	48	38	50	25	47	32	51	25	54	24	51	34	54	37
10....	36	24	43	29	38	24	42	23	50	31	46	23	58	27	54	37	56	28	51	26	44	23	49	28	58	33	61	39
11....	43	26	42	31	39	25	59	22	51	35	50	23	59	40	52	40	56	38	52	35	53	29	56	34	58	42	60	45
12....	35	24	38	30	39	26	42	16	47	26	50	23	50	37	46	36	47	23	42	27	44	24	49	21	47	32	51	40
13....	37	24	35	26	36	20	41	13	39	22	39	26	44	29	38	31	41	21	39	22	42	18	44	19	42	25	42	28
14....	49	20	48	22	50	17	52	13	48	23	52	19	51	18	44	28	51	15	49	22	52	18	50	16	49	22	49	28
15....	52	34	54	32	55	31	56	25	56	26	51	31	59	27	54	38	57	23	57	28	56	24	59	24	60	34	59	36
16....	38	30	37	26	31	19	49	23	46	32	52	26	52	30	41	31	47	27	41	27	47	27	51	26	48	29	50	40
17....	41	14	39	23	38	14	42	10	46	22	44	16	50	19	43	30	49	21	43	31	45	18	48	18	47	26	54	40
18....	39	20	46	31	42	23	44	18	42	34	49	25	46	33	48	41	55	32	48	31	39	27	49	20	54	40	58	44
19....																												



TABLE 3.—Maximum and minimum temperatures at selected stations, December, 1910. District No. 2—Continued.

Date.	Georgia.						Florida.																						
	Thomasville.		Waycross.##		West Point.##		Avon Park.		Fort Myers.		Gainesville.##		Jacksonville.		Jupiter.		Key West.		Miami.		Orlando.		Pensacola.		Tallahassee.##		Tampa.		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1....	43	29	44	30	.....	26	56	39	60	44	50	50	43	32	59	41	67	64	61	45	57	37	44	31	42	29	51	39	
2....	47	25	47	27	.....	21	56	37	57	40	48	36	47	29	54	36	64	57	58	41	51	30	48	28	46	25	49	37	
3....	51	24	54	23	.....	20	62	29	57	38	56	32	54	31	62	37	59	53	62	37	58	29	52	34	52	27	56	35	
4....	64	28	64	28	.....	21	71	31	64	36	63	31	61	37	68	44	65	51	71	45	66	31	65	50	62	32	64	36	
5....	66	49	70	42	.....	38	76	40	71	44	71	40	68	48	74	51	76	59	77	51	75	38	68	47	67	30	68	45	
6....	53	35	47	44	.....	37	67	55	68	60	71	41	64	39	78	51	76	65	80	56	69	54	48	36	47	44	66	47	
7....	48	28	50	33	.....	28	60	35	60	48	53	35	48	34	57	42	65	54	69	50	56	37	48	30	47	29	52	37	
8....	58	29	59	27	.....	23	69	31	64	39	58	30	58	34	69	45	67	52	72	47	65	30	54	37	55	30	62	34	
9....	65	30	65	37	.....	58	74	41	64	44	62	36	63	38	68	51	68	61	73	53	66	35	63	43	60	35	63	40	
10....	65	35	62	37	.....	52	70	38	69	49	62	36	63	44	70	49	71	60	73	53	70	35	64	57	64	40	69	44	
11....	69	40	60	45	.....	54	78	40	72	45	61	41	66	48	75	52	70	60	74	51	74	43	65	53	65	41	70	49	
12....	66	37	58	40	.....	52	74	39	70	52	61	42	60	42	69	53	72	61	74	52	68	46	55	44	59	43	68	49	
13....	52	34	50	37	.....	44	67	46	70	50	57	40	47	37	72	52	67	60	75	54	68	44	54	40	52	36	63	44	
14....	58	29	62	25	.....	48	70	45	71	48	64	36	58	34	71	63	69	59	71	62	70	45	55	39	56	30	65	43	
15....	60	33	65	35	.....	54	73	43	69	48	67	37	64	43	71	51	69	62	73	56	72	40	63	49	62	35	68	47	
16....	64	44	65	39	.....	53	72	44	70	49	68	47	64	46	70	51	70	62	72	53	72	44	63	55	64	40	70	51	
17....	62	42	65	32	.....	51	78	48	75	50	70	48	64	45	75	55	75	62	76	61	74	45	56	50	65	43	73	53	
18....	61	50	65	43	.....	50	74	56	75	60	72	52	70	50	76	62	78	64	79	62	77	53	60	53	64	44	69	59	
19....	62	43	63	32	.....	55	72	54	67	58	67	50	65	49	71	55	72	63	75	63	71	55	61	50	60	51	64	54	
20....	55	34	53	39	.....	40	70	51	68	56	59	40	56	40	70	49	71	63	74	53	68	48	54	37	53	40	64	50	
21....	47	28	48	27	.....	41	60	36	58	44	50	29	47	31	56	40	67	53	67	46	57	36	48	32	47	28	53	39	
22....	55	27	57	23	.....	46	68	33	67	39	62	32	56	34	66	44	69	53	68	46	67	30	63	40	56	33	65	37	
23....	68	43	70	25	.....	49	77	66	75	56	72	41	70	49	73	66	76	68	74	63	74	53	65	43	66	40	69	54	
24....	55	37	62	45	.....	46	70	66	53	66	58	56	59	42	72	52	72	61	74	62	70	53	54	34	53	40	59	44	
25....	56	31	56	32	.....	50	72	62	40	63	43	38	31	53	35	66	44	64	56	72	48	64	35	53	37	54	32	60	41
26....	63	30	65	29	.....	58	73	72	40	67	47	66	41	66	40	71	51	68	59	74	53	71	43	63	47	60	34	69	44
27....	69	36	70	33	.....	63	77	73	46	74	49	69	42	68	41	74	56	71	61	74	55	73	42	62	51	65	38	71	48
28....	72	41	72	38	.....	66	77	77	47	74	49	73	46	70	48	74	68	75	63	75	64	77	47	65	53	68	42	72	52
29....	74	45	78	45	.....	67	79	72	53	78	56	77	53	75	52	74	69	77	67	74	67	77	49	67	59	72	49	77	57
30....	65	40	58	57	.....	45	63	83	65	78	63	71	58	70	50	82	67	78	66	80	65	82	60	59	40	58	53	73	58
31....	52	39	53	41	.....	45	63	81	58	80	63	48	57	52	78	67	77	65	78	62	75	56	56	39	54	40	77	57	
Mns....	59.3	35.3	59.9	35.2	.....	51.6	69.1	44.4	68.4	49.0	63.2	40.9	60.4	41.1	60.8	52.1	70.5	60.1	72.5	54.1	68.8	42.7	57.9	43.2	57.9	37.5	65.1	45.9	

Date.	Alabama.										Mississippi.													
	Anniston.		Birmingham.		Eufaula.##		Mobile.		Montgomery.		Tuscaloosa.##		Uniontown.		Columbus.##		Hattiesburg.##		Jackson.		Meridian.			
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		
1....	34	25	43	27	36	25	38	25	46	31	39	28	38	25	44	26	39	24	49	31	45	27	40	27
2....	39	22	46	22	39	24	41	22	49	29	43	26	42	24	44	21	43	21	55	20	48	24	44	24
3....	45	19	52	20	47	24	46	21	53	31	48	25	43	21	47	24	50	21	59	24	50	22	50	23
4....	56	40	58	31	59	40	56	26	66	47	61	38	63	22	57	35	63	26	71	25	64	40	64	47
5....	69	37	75	57	69	36	66	35	73	49	73	43	73	23	73	42	71	44	75	51	71	45	70	39
6....	37	27	57	35	36	28	40	37	49	37	43	33	37	35	53	34	34	33	46	38	45	34	39	31
7....	40	22	45	24	39	25	42	24	51	30	44	28	43	29	46	28	47	24	56	28	55	22	46	26
8....	53	22	58	22	54	28	51	25	58	36	54	30	53	25	54	25	55	24	61	24	54	24	56	27
9....	55	32	65	29	58	40	57	27	62	40	60	35	58	25	63	35	62	25	72	26	69	43	63	38
10....	55	33	68	44	56	44	57	30	67	55	58	44	60	40	61	46	67	39	78	42	67	53	65	52
11....	53	31	64	46	53	35	57	40	67	53	59	43	54	34	61	40	57	29	65	50	59	45	57	39
12....	48	30	53	42	45	30	52	34	56	44	51	38	50	40	54	43	45	30	50	48	55	40	51	39
13....	46	22	52	36	45	23	47	28	55	42	49	30	45	27	48	31	45	20	51	41	46	37	44	32
14....	50	20	59	28	51	28	50	23	62	42	53	30	50	25	54	29	57	21	58	41	59	40	55	32
15....	49	27	63	.....	49	38	60	25	65	48	57	36	52	25	61	41	56	22	67	42	54	47	57	47
16....	50	26	65	36	51	29	56	33	66	56	58	36	53	29	60	35	57	25	65	47	65	40	57	38
17....	47	27	53	43	47	35	55	31	57	51	53	37	50	29	50	40	48	27	55	48	52	46	50	42
18....	49	42	58	50	50	45	52</																	



Climatological Data for December, 1910.  
DISTRICT No. 3, OHIO VALLEY.

FERDINAND J. WALZ, District Editor.

GENERAL SUMMARY.

The weather during December, 1910, was cold, dark, and generally disagreeable over the greater portion of the district. Over central and eastern Kentucky, Ohio, and the northeastern portions of the district it was one of the coldest Decembers during the past 25 years. Sunshine was largely deficient over the central and northern sections. In Pennsylvania it was only about 20 per cent of the possible amount, and over most of the rest of the area mentioned it was less than 50 per cent. Over the more southerly portions, however, the sunshine was about normal. The mean temperatures averaged from 3° to 8° below normal, largely due to the persistence of moderately cold weather which prevailed during practically the first 25 days, rather than to any extremely low temperatures. There was but one warm period during the month. It occurred about the 28th and lasted only two or three days. During these few days, however, the temperatures were decidedly high for the season. Precipitation, mostly in the form of light snow, occurred nearly every day over the area drained by the Ohio River and its tributaries above Cincinnati, Ohio. The precipitation was above normal over a comparatively small area covering the upper watersheds of the Tennessee River. In Illinois and western Indiana it was decidedly deficient, but over the rest of the district, while below normal, it was sufficient for all general purposes. Some heavy snow occurred in the early part of the month instead of the usual rains for that period.

The most important events of the month were the heavy snow that fell about the 5th-6th and the moderately heavy rains which fell generally over the district in the period 28th-30th. The ground was covered with snow in varying depths from Indiana and central Kentucky eastward until the warm weather and rains near the end of the month, which carried it all off, except in the higher elevations of western Pennsylvania, where 1 or 2 inches still remained at the close of the month.

The month was generally favorable for wheat and grass in Kentucky, Ohio, and Indiana, but in Illinois, especially following the droughty conditions of November, there was entirely too little moisture for either of those crops. In Tennessee it was generally reported that wheat had attained little or no growth and that much had not germinated.

TEMPERATURES.

The cold weather which set in over the district about the 28th of November continued with remarkable persistency until the 26th day of December. During this period of four weeks the daily mean temperatures were almost continuously below normal, the daily deficiency ranging in amount between 2° and 20°. There were but three or four days during this time when the average daily temperature was above normal over any considerable area, while in many localities it was above normal only on one day. Much milder weather prevailed as a rule after the 25th, although it was again quite cold in parts of the district on the 31st. It was unseasonably warm in all parts of the district on the 28th and 29th. The daily average temperature at the various stations ranged from 4° to 20° above normal on those days, while maximum temperatures of from 56° to 73° were registered in the various States or parts of States located in this district, except that in western New York the highest temperature of the month was 46° on the 28th.

While the month as a whole was unusually cold, the average temperature ranging from 3° to 8° below normal,

and over much of the district, notably western New York, western Pennsylvania, West Virginia, Ohio, and Kentucky, it was one of the coldest Decembers, from the viewpoint of average temperature, during the past 20 to 25 years, yet no extremely low temperatures were registered. The lowest temperature reported in the whole district, -15°, occurred at Oakland, Md., on the 17th. The lowest in other States in the district was as follows: New York, Ohio, and Indiana, -10°; Virginia, -9°; West Virginia, -8°; Kentucky and Tennessee, -3°; North Carolina, zero; Illinois, 2°; Alabama, 10°; and Georgia, 12°. In Virginia, Kentucky, and Tennessee, temperatures below zero were registered at only one or two stations, and on only one or two days, while in Illinois the temperature did not reach zero at any station in this district.

Cold waves were neither severe nor pronounced, and there was great irregularity in the time the coldest weather of the month was experienced in the several sections, and, in fact, in localities not far separated. In the main the coldest weather was experienced in the northeastern portion of the district and in Illinois during the period 9th-16th, but over the rest of the district during the period 21st-25th, Christmas morning being the coldest in Ohio, Indiana, and Kentucky.

PRECIPITATION.

The total precipitation for the month exceeded 4 inches over the watershed of the Tennessee River in eastern Tennessee, North Carolina, Georgia, and Alabama, which resulted in a moderate excess over that region. In the main over the rest of the district the precipitation for the month was deficient, the deficiency, however, being small over most of it, although amounting to nearly an inch in portions of Illinois and Indiana. The greatest deficiency was over the Wabash watershed, including its large tributaries, in eastern Illinois, and central and western Indiana, where the total monthly precipitation was less than 2 inches. Over the rest of the Ohio River Basin the monthly precipitation ranged generally between 2 and 4 inches.

Over the northeastern portion of the district, including West Virginia, and nearly all of Ohio, precipitation occurred nearly every day in the month. It was mostly in the form of snow, however, and the daily amounts, except in two or three storm periods, were not large. Over the rest of the district precipitation occurred every day during the first week, although very light during the first three days, and again in the periods 18th-20th, 23d-24th, and 28th-30th. The precipitation at the end of the month was in the form of rain and occurred in considerable amount over the whole district. In the other periods it was generally rain in the southern and snow in the central, northern, and mountain sections. The most striking event of the month in this connection was the remarkably heavy snowfall over Kentucky, the extreme southern portions of Indiana and Ohio, and the eastern sections of the district, which attended the eastward movement of a general low barometric area over the central valleys in the period 4th-6th. Over a great deal of the area mentioned the snowfall amounted to from 4 to 11.5 inches, and for the most part it was the heaviest on record so early in the month.

The snowfall of the month was unusually heavy for December over nearly all the mountain section of the district, and in Pennsylvania, Ohio, Kentucky, and the greater portion of Indiana, but in Illinois the amount was less than usual except in the extreme southern portion. In Tennessee the monthly amounts ranged between a trace and







TABLE 1.—Climatological data for December, 1910. District No. 3, Ohio Valley.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of overcast days.
New York.																				
Allegany	Cattaraugus.	1,441	4	21.0		46	28	- 5	31	43	2.78		0.85	16.3	21	9	7	15	sw.	Charles E. Whitney.
Bolivar	Allegany.	1,800	16	20.4	- 5.0	44	28	- 10	16	40	2.30	- 0.51	0.72	25.0	14	2	7	22	sw.	B. O. Newton.
Franklinville	Cattaraugus.	1,598	13																	Dr. J. W. Kales.
Olean	do.		2								2.59		0.80	20.4	16	5	9	17	w.	John W. Alles.
Pennsylvania.																				
Aleppo	Green.	1,135	9	26.5		68	30	- 5	10	45	2.40		0.60	14.0	12	5	3	23	sw.	J. S. Hinerman.
Baldwin	Butler.	1,404	4	22.6		46	30	- 2	10	33	6.97		2.00	15.9	16	0	1	30	w.	S. H. Templeton.
Claysville	Washington.	1,127	6	26.4		55	29	- 2	9	35	2.77		0.59	14.5	14	8	5	17	w.	E. T. Buchanan.
Franklin	Venango.	955	36	23.3	- 5.3	48	29	- 2	10	29	3.57	+ 0.23	0.88	13.0	19	4	5	22	nw.	F. E. Dixon.
Greenville	Mercer.	950	14	23.6	- 7.4	43	28	- 4	13	38	3.21	+ 0.42	0.63	17.2	17	3	4	24	nw.	A. M. Orr.
Indiana	Indiana.	1,350	16	24.9	- 5.2	48	29	- 3	17	37	4.21		0.54	27.3	20	6	9	16	w.	Rev. J. M. Welch.
Johnstown	Cambria.	1,184	24	25.8	- 6.9	47	28	- 3	10	39	3.31	- 0.40	0.52	23.4	23	4	8	19	nw.	E. C. Lorentz.
Lyndup.	Westmoreland.	1,420	18	26.4	- 5.9	58	29	- 4	17	37	3.97	+ 0.41	0.98	42.2	19				sw.	Murray Forbes.
Pittsburg.	Allegheny.	842	40	27.0	- 6.8	53	29	- 11	16	25	2.87	+ 0.09	0.86	13.0	19	4	7	20	w.	U. S. Weather Bureau.
Saegertown.	Crawford.	1,116	19	23.6	- 5.2	45	29	- 11	10	43	3.46	+ 0.05	0.34	26.5	23	0	6	25	sw.	J. G. Apple.
Skidmore.	Lawrence.	1,000	6	22.3		47	28	- 8	17	38	2.45		0.75	11.0	9	6	2	23	sw.	W. H. Stoner.
Somerset.	Somerset.	2,250	54	22.4	- 6.3	48	30	- 10	10	46	4.41	+ 0.33	1.00	31.5	18	0	10	21	nw.	W. M. Schrock.
Uniontown.	Fayette.	999	22	25.3	- 9.7	53	28	- 0	10	36	3.62	- 0.14	1.10	18.5	10	2	11	18	sw.	Wm. Hunt.
Warren.	Warren.	1,137	21	22.9	- 4.9	45	29	- 2	10	37	2.74	- 0.64	0.50	23.8	17	4	1	26	nw.	Anna Simpson.
Maryland.																				
Deer Park.	Garrett.		16	21.2	- 6.6	56	29	- 14	17	54	3.60	- 0.12	0.60	32.0	11				sw.	S. P. Specht.
Grantville.	do.		10	22.2	- 6.8	52	29	- 6	10	39	3.21	- 0.61	0.50	27.0	16	6	9	16	sw.	J. S. Miller.
Oakland.	do.		10	22.6		56	29	- 15	17	54	2.35		0.45	19.1	15	5	6	15	w.	R. E. Weber.
West Virginia.																				
Bancroft.	Putnam.		6	30.0		65	29	- 9	22	37	2.97		0.72	10.0	13	7	3	21	nw.	James Hill.
Beechey.	Raleigh.	2,440	11	28.6	- 4.8	65	29	- 2	22	47	3.65	+ 0.69	0.90	12.0	11	13	1	17	w.	John A. Ewart.
Bens Run.	Pleasants.	622	9	28.5	- 4.6	56	28	- 5	9	31	3.07	+ 1.02	0.70	24.0	13	13	8	10	sw.	J. D. Riggs.
Bluefield.	Mercer.	2,563	15	30.6	- 4.2	64	29	- 5	22	36	2.00	- 1.00	0.55		6	0	31	0	sw.	Norfolk & Western Ry.
Buckhannon.	Upshur.	1,472	20	27.6	- 5.7	62	29	- 0	22	40	2.67	- 1.48	0.80	16.0	11	8	1	22	sw.	H. A. Darnall.
Cairo.	Ritchie.	667	8	28.7		55	28	- 5	8	40	2.60		1.00	14.0	7	5	7	19	w.	Van A. Zevilly.
Central Station.	Doddridge.	900	11	26.2	- 7.1	60	29	- 7	9	39	2.24	- 1.14	0.64	12.8		4	6	18	sw.	G. W. Sherwood.
Charleston.	Kanawha.	598	24	34.0		68	29	- 15	22	34	3.21	+ 0.02	0.90	7.5	11	9	8	14	w.	R. C. Hewes.
Creston.	Wirt.	612	10	29.8		60	29	- 3	9	31	3.21	+ 0.09	0.74	12.5	13	4	3	24	w.	J. M. Reed.
Cuba.	Jackson.	544	9	29.6		62	29	- 6	9	35	2.86	- 0.32	0.90	13.5	11	4	6	21	nw.	C. T. Perry.
Elkhorn.	McDowell.	1,933	18	32.6	- 4.9	65	29	- 6	22	37	2.45	- 0.71	1.10	9.5	12	12	0	19	w.	J. J. Lincoln.
Elkins.	Randolph.	1,940	11	30.9	- 4.1	61	29	- 1	17	42	2.72	- 0.70	0.63	23.1	21	4	6	21	w.	U. S. Weather Bureau.
Fairmont.	Marion.	879	18	28.1		64	29	- 4	9	44	2.55	- 0.88	0.60	14.0	15				sw.	H. Glenn Fleming.
Glenville.	Gilmer.	738	22	31.1	- 3.7	65	28	- 2	9	35	3.28	- 0.42	0.83	12.0	12	6	1	24	nw.	John Holt.
Grafton.	Taylor.	985	18	27.9	- 6.2	65	29	- 2	9	44	3.94	+ 0.50	0.67	18.6	13	11	2	18	sw.	John W. Snider.
Green Sulphur Springs.	Summers.	1,000	14	29.2	- 4.7	64	29	- 3	22	38	1.96	+ 0.49	0.44	6.2	14	8	3	20	w.	Arthur George.
Hinton.	do.	1,400	21	29.6	- 6.6	65	29	- 9	22	37	2.23	- 0.51	1.06	3.7	13	12	2	17	w.	J. B. Lavender, C. K.
Huntington.	Cabell.	510	15	29.8	- 6.6	64	29	- 10	9	34	3.10	- 0.17	1.50	15.3	9	7	4	20	w.	L. H. Hutchinson.
Lewisburg.	Greenbrier.	2,200	10	26.3	- 6.4	57	29	- 0	14	36	2.18	- 0.73	0.80	8.2	7	12	7	12	nw.	Geo. T. Argabrite.
Logan.	Logan.	665	8	35.4		72	29	- 13	22	35	4.30		1.55	7.0	10	4	19	8	sw.	H. C. Ragland.
Lost Creek.	Harrison.	1,033	14	28.4	- 5.1	64	29	- 5	9	43	2.04	- 1.59	0.62	9.2	12	8	2	21	w.	Allen Smith.
Madison.	Boone.	704	5	29.4		62	29	- 11	15	33	1.55		0.30	6.5	9	18	7	16	sw.	S. E. Bradley.
Mannington.	Marion.	967	7	27.2		62	29	- 8	9	43	2.69	- 0.69	1.41	20	8	1	22	w.	Jas. A. Morgan.	
Marlinton.	Pocahontas.	2,109	11	22.6	- 6.8	48	29	- 8	14	40	3.63	+ 0.63	1.00	15.0	9	13	3	15	sw.	C. J. McCarty.
Morgantown.	Monongalia.	1,250	36	28.4	- 6.0	63	29	- 4	9	36	2.13	- 1.09	0.80	17.0	10	11	8	12	sw.	Horace Atwood.
Moundsville.	Marshall.	640	8	28.4		58	28	- 1	9	36	2.37	- 0.55	0.50	16.0	15	11	2	18	sw.	J. E. Matthews.
New Cumberland.	Hancock.	987	10	25.0	- 5.8	52	28	- 1	17	34	2.60	+ 0.26	0.65	3.0	9	3	0	28	sw.	Frank S. Evans.
New Martinsville.	Wetzel.	634	17	29.2	- 5.8	55	28	- 1	9	33	2.92	- 0.53	0.80		9	4	18	sw.	Wm. Ankron.	
Nuttallburg.	Fayette.	2,252	18	30.0	- 4.6	61	29	- 12	12	28	1.75	- 1.18		17.0					sw.	Miss Donna Tully.
Parkersburg.	Wood.	638	23	28.4	- 6.9	61	29	- 1	9	28	3.34	+ 0.57	1.00	19.8	14	3	2	26	w.	U. S. Weather Bureau.
Parsons.	Tucker.	1,662	11	25.8	- 5.9	62	29	- 5	10	44	5.15	+ 1.28	1.30	38.0	14	5	11	16	sw.	J. W. Swisher.
Philippi.	Barbour.	1,192	18	27.8	- 5.4	65	29	- 5	9	44	2.24	- 1.68	0.32	12.6	19	3	16	12	w.	J. D. Dadisman.
Pickens.	Randolph.	2,785	20	24.4	- 8.3	56	29	- 0	22	42	6.90	+ 1.93	1.80	51.0	18	7	4	20	w.	Dr. J. L. Cunningham.
Pineville.	Wyoming.		2																sw.	W. V. Senter.
Point Pleasant.	Mason.	553	21	30.2	- 5.2	61	29	- 1	9	31	4.03	+ 1.03	1.80	19.0	13	8	2	21	sw.	W. D. Holmes.
Powellton.	Fayette.	904	14	32.2	- 3.6	66	29	- 7	22	33	3.35	+ 0.46	0.86	12.0	13	5	19	7	sw.	Morris Hansford.
Princeton.	Mercer.	2,469	10	26.8		58	29	- 0	22	38	4.25	- 0.83	1.00	15.0	10	3	19	9	w.	H. Scott.
Robertson.	Putnam.		1	28.1		64	29	- 3	9	37	3.28	- 0.83	0.80	10.0	10	6	0	25	w.	E. P. Turley.
Ryan.	Roane.	639	7	29.6		66	29	- 4	22	44	2.99	- 0.80	0.90	19.5	16	5	2	24	nw.	Wm. E. Ryan.
Smithfield.	Wetzel.		6	25.9		60	28	- 0	9	36	2.01	- 0.45	0.85	18.0	16	2	5	24	nw.	O. M. Whisler.
Spencer.	Roane.	710	7	27.5		62	29	- 5	22	45	3.35	+ 0.38	0.85	10.1	13	0	16	15	sw.	A. M. McKown.
Sutton.	Braxton.		5	30.7		67	29	- 5	21	44	1.77	- 0.50	10.0	10.0	8	3	8	20	sw.	J. E. Baughman.
Terra Alta.	Preston.	3,207	10																sw.	C. F. Dodge.
Union.	Monroe.		7	26.2		60	29	- 2	14	40	3.38	- 0.38	0.98		11				sw.	Shelton Clark.
Valley Fork.	Clay.		7									1.15	0.35							



TABLE 1.—Climatological data for December, 1910. District No. 3—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast days.
Ohio—Continued.																			
Gratiot	Licking	1,000	21	5.4	- 6.7	53	28	3	22	31	2.43	- 0.60	0.70	8.0	10	5	6	20	W. B. Longstreth.
Green	Adams	500	17	30.2	- 5.0	58	28	5	17	28	2.15	- 1.07	1.00	12.7	7	4	12	15	W. F. Kenyon.
Green Hill	Columbiana	1,135	18	22.9	- 6.0	49	28	1	7	17	2.07	- 0.56	0.59	9.2	15	7	8	16	Jos. E. Bentley.
Greenville	Darke	1,060	24	25.3	- 5.8	51	28	2	2	35	2.41	- 0.05	0.82	7.0	8	5	14	12	G. A. Katzenberger.
Hillsboro	Highland	1,063	31	27.6	- 6.0	54	28	10	9	24	3.36	+ 0.18	1.56	12.7	14	6	8	17	Carey H. Roush.
Ironton	Lawrence	575	27	30.8	- 4.5	63	29	5	9	33	3.21	+ 0.38	1.15	15.9	10	7	7	17	James Bull.
Jacksonburg	Butler	973	42	26.0	- 5.7	53	28	5	25	31	2.97	+ 0.05	1.15	16.0	6	13	0	18	Dr. J. B. Owsley.
Kenton	Hardin	1,015	18	23.0	- 8.7	48	28	0	9	29	2.50	+ 0.07	0.85	9.0	7	7	3	21	N. S. Martin.
Killbuck	Holmes	1,087	18																Lloyd C. Schonauer.
Lancaster	Fairfield	908	15	27.8	- 4.5	52	28	10	9	26	1.90	- 1.25	0.80	3.0	8	10	2	19	R. L. Renshaw.
McConnellsville	Morgan	710	26	26.5	- 6.5	56	28	0	22	32	2.47	- 0.47	0.76	12.5	15	5	8	18	C. H. Morris.
Marietta	Washington	627	90	29.3	- 5.0	55	28	1	9	32	3.27	- 0.16	1.00	16.1	14	5	6	20	Prof. T. D. Biscoe.
Marion	Marion	980	32	25.6	- 5.3	48	28	5	9	23	2.56	- 0.07	0.75	9.6	10	4	8	19	Dr. E. H. Radensperger.
Milfordilton	Knox	1,300	18	24.2	- 4.5	49	28	4	9	28	1.86	- 1.09	0.66	7.0	9	10	7	14	L. H. Burgess.
Milligan	Perry	875	17	25.8	- 6.1	58	28	4	13	38	2.57	- 0.37	0.79	6.5	10	6	6	19	V. C. Eveland.
Millport	Columbiana	1,145	18	23.6	- 5.1	48	28	7	17	39	2.25	- 0.54	0.48	10.0	16	2	9	20	G. F. Copeland.
Neile	Coshocton	850	10	24.5	- 5.0	54	28	1	22	32	2.42	- 0.41	0.60	8.0	10	9	5	17	Miss Ethel L. Gamertsfelder.
New Alexandria	Jefferson	1,050	25	25.4	- 7.1	52	29	2	21	35	2.80	- 0.52	0.60	10.0	10	10	1	20	Mrs. Mary K. Pennell.
New Berlin	Stark	1,100	18	23.4	- 5.8	48	29	2	10	32	2.97	+ 0.44	0.95	11.0	14	6	2	23	Clayton Holl.
New Waterford	Columbiana	1,053	16	23.9	- 5.9	51	28	5	17	35	1.35	- 2.12	0.40	9.0	8	17	0	14	Sam. C. Scott.
Ohio State University	Franklin	757	27	26.2	- 5.4	52	28	7	9	23	1.99	- 0.58	0.66	4.4	9	4	8	19	Prof. H. C. Lord.
Pataaskala	Licking	1,015	18	25.2	- 5.4	52	28	4	9	29	2.26	- 1.00	0.62	8.0	12	4	7	20	J. N. Ridenour.
Peebles	Adams	645	15	27.1	- 5.4	50	27	6	9	43	2.48	- 1.00	1.13	9.0	6	9	7	15	Oran O. Smalley.
Philo (1)	Muskingum	1,018	15	26.2	- 5.2	55	28	8	21	27	2.47	+ 0.05	0.70	9.5	11	6	5	20	L. C. Burckholter.
Piqua	Miami	847	2																Harry L. Roberts.
Plattsburg	Clarke	1,130	17	25.4	- 5.4	50	28	2	13	23	2.35	- 0.48	1.05	13.0	7	5	12	14	F. E. Stewart.
Portsmouth	Scioto	527	79	29.9	- 6.0	60	29	7	9	26	3.33	- 0.02	1.45	8.5	10	3	2	26	Dr. H. A. Schirrmann.
Prospect	Marion	909																	Nell J. Gast.
Rittman	Wayne	960	18	27.1	- 2.2	46	28	1	16	36	1.33	- 1.24	0.38	8.6	10	9	2	20	J. B. Gish.
Shenandoah	Richland	1,160	18	23.4	- 6.4	48	28	1	10	27	2.15	- 0.30	0.58	11.5	13	3	11	17	T. B. Arnett.
Sidney	Shelby	985	27	26.0	- 5.1	49	28	0	25	31	2.40	- 0.29	0.72	9.5	9	10	4	17	Hamline B. Blake.
Somerset	Perry	1,080	11	25.8	- 5.2	55	28	9	21	31	1.63	- 0.95	0.42	7.0	14	8	7	16	Miss M. W. C. Sheridan.
Springfield	Clarke	980	16																W. A. Webster.
Summerfield	Noble	1,187	4	25.8		55	28	3	9	35	2.83		0.60	11.0	14	3	7	21	H. R. McClintock.
Syracuse	Meigs	583	29	29.8		60	29	3	9	34	2.65		0.90	14.0	8	4	5	22	E. G. Campbell.
Thurman	Gallia	696	17	30.0	- 5.1	59	29	7	17	30	3.95	+ 1.13	1.10	22.0	7	5	8	18	D. D. Thomas.
Urbana	Champaign	1,031	40	24.5	- 5.1	52	28	4	25	29	2.29	- 0.74	0.55	14.2	9	4	12	15	Prof. J. H. Williams.
Warren	Trumbull	900	21	24.6	- 5.2	47	28	1	17	35	3.77	+ 0.69	0.60	26.9	17	3	8	20	M. D. McCorkle.
Waverly	Pike	590	27	27.6	- 6.6	56	28	3	9	34	2.88	- 0.08	0.95	12.3	9	10	2	19	Herrmann A. Lorbach.
Waynesville	Wayne	700	25	26.7	- 4.3	53	28	6	12	26	2.02	- 0.70	0.78	6.5	7	7	8	16	Charles Michener.
Woodsport	Wayne	1,030	30	24.4	- 6.4	49	28	0	22	35	2.29	- 0.37	0.63	7.2	15	0	4	27	Experiment Station.
Youngstown	Mahoning	846	18																G. R. Patton.
Zanesville	Muskingum	700	23																S. G. Sprague.
Virginia.																			
Big Stone Gap	Wise	1,540	20	32.4	- 3.6	63	29	12	22	31	3.99	+ 0.12	0.90	4.5	9	8	4	19	John W. Fox, sr.
Blacksburg	Montgomery	2,170	20																Agricultural Exp. Station.
Burkes Garden	Tazewell	3,250	16	25.6	- 6.4	58	29	9	22	48	3.85	- 0.06	1.45	9.0	8	8	1	22	C. H. Greaver.
Elk Knob	Lee	3,243	8	30.6		62	29	10	21	26	4.34		1.19	5.0	15	10	4	17	Henry Nicoll.
Galax	Grayson	2,300	1	30.0		57	29	8	14	39	1.43		0.50	3.0	4	11	2	18	E. C. Williams.
Ivanhoe	Wythe	2,028	7	29.6		54	29	12	14	32	2.64		0.92	4.6	12	11	13	7	Miss Alice G. Jewett.
Lebanon	Russell	2,131	1	32.0		64	29	2	22	41	3.63		0.84	10.0	11	9	4	18	R. W. Swain.
Marion	Smyth	2,224	16	30.0	- 6.5	66	29	2	22	37	3.05	- 0.07	0.71	11.0	13	8	11	12	S. W'n State Hospital.
Max Meadows	Wise	2,028	15	30.6	- 5.3	65	29	9	22	32	1.57	- 1.79	0.70	1.5	8	12	6	13	James M. Graham.
Mendota	Washington	1,350	2																Frank M. Baker.
Radford	Montgomery	1,773	2																Arthur Roberts.
Spears Ferry	Scott	2,121	14																Mrs. L. E. Veneable.
Wytheville	Wythe	2,293	17	30.0	- 5.3	61	29	9	22	32	2.12	- 1.62	1.12	4.6	11	8	12	11	U. S. Weather Bureau.
North Carolina.																			
Altapass	Mitchell	2,629																	C. C. & O. Railway.
Andrews	Cherokee	1,800		35.0		60	29	11	14	39	6.05		2.27	T.	13	12	11	8	J. D. Link.
Asheville	Buncombe	2,250	31	32.9	- 4.9	58	29	10	22	32	2.48	- 1.56	1.11	1.8	9	12	11	8	U. S. Weather Bureau.
Bannockburn	Watauga	3,750	2	27.4		53	29	0	22	39	4.40		1.00	12.0	10	12	8	11	T. L. Lowe.
Brevard	Transylvania	2,230	9	30.8		56	15	7	14	43	4.12		3.00	T.	5	15	14	2	W. E. Breese.
Bryson City	Swain	2,000	22																D. K. Collins.
Cullowhee	Jackson	2,100		33.2		58	28	5	21	40	4.33		2.67	1.3	10	13	4	14	Frank H. Brown.
Hendersonville	Henderson	2,167	14	34.0	- 4.6	57	27	10	21	37	5.05	- 0.58	1.90	T.	8	19	6	6	T. W. Valentine.
Highlands	Macon	3,670	20	30.4	- 4.9	52	10	6	21	34	6.09	- 0.77	3.74	0.5	5	18	4	9	nw.
Hot Springs	Madison	1,326	13	35.8	- 6.2	70	29	12	14	36	2.41		1.18	0.7	12	11	8	12	P. A. Garner.
Jefferson	Ashe	2,800	3	31.6		56	28	11	21	36	2.58		0.75	2.3	7	7	2	22	Prof. E. J. Johnson.
Marshall	Madison	1,646	9																Rev. W. E. Finley.
Murphy	Cherokee	1,614	34																Miss Julia A. Campbell.
Rock House	Macon	3,100	18	33.4	- 6.5	54	27	10	21	27	6.90	- 0.27	3.55	0.6	6	16	9	6	Barry C. Hawkins.
Waynesville	Haywood	2,736	16	32.0	- 6.4	58	29	1	21	44	3.76	- 0.05	1.30		8	16	2	13	Judge J. C. L. Gudge.
Georgia.																			
Diamond	Gilmer</																		



TABLE 1.—Climatological data for December, 1910. District No. 3—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, (all inch or more).	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
Tennessee—Continued.																				
Clarksville	Montgomery	520	47	36.5	- 3.9	61	29	16	21	33	3.13	+ 1.36	1.01	3.0	7	14	6	11	Prof. Jas. A. Lyon.	
Clinton	Anderson	22	22								5.23	+ 0.75	1.55	3.0	14	11	0	20	John Thompson.	
Dandridge	Jefferson	6	6								4.30		1.80	3.0	11	15	0	16	J. E. Swann.	
Decatur	Meigs	850	14	34.0	- 5.8	63	28	9	14	39	6.55	+ 1.19	4.40	0.8	13	10	6	15	J. W. Lillard.	
Dickson	Dickson	800	14	35.8	- 2.3	59	27	10	21	33	3.09	+ 1.21	1.72	2.5	5	10	8	13	N. R. Sugg.	
Dover	Stewart	15	15	35.8	- 3.7	62	28	11	21	39	3.66	- 0.64	1.37	2.0	4	13	5	13	A. M. Tippit.	
Dunlap	Sequatchee	726	1	36.2		65	29	11	14	42	5.15		3.30	T.	8	10	8	13	S. B. Boyd.	
Elizabethton	Carter	1,575	20								3.40	+ 0.10	2.0	8	16	1	14	Chas. Boyd.		
Eramus	Cumberland	1,850	13	31.3	- 4.6	62	29	1	21	41	3.62	- 2.03	1.50	0.7	13	4	13	14	Mrs. E. D. Ashley.	
Florence	Rutherford	560	28	36.2	- 4.6	62	28	13	25	33	4.08	+ 0.15	1.50	1.0	6	12	7	12	Erastus P. Bell.	
Franklin	Williamson	655	20	34.6	- 5.4	64	28	15	21	35	3.95	- 0.47	1.52		7	11	4	16	F. J. Hyde.	
Hall's Hill	Rutherford	8	8								3.19		1.10	0.1	6	13	0	18	Ed. F. Wright.	
Harriman	Roane	841	15	33.8	- 5.0	65	29	13	14	38	3.71	- 0.95	1.82	1.0	7	7	15	9	Robert R. Ayres.	
Hohenwald	Lewis	983	24	35.5	- 4.0	62	27	10	21	35	4.68	- 0.42	1.70	T.	7	12	9	10	John Lutzelman.	
Iron City	Lawrence	23	23	36.8	- 3.6	64	28	10	21	31	3.48	- 2.41	1.33		7	3	23	5	Capt. H. P. Seavy.	
Jefferson City	Jefferson										4.39		2.55	2.5	9				C. Calvin Maddox.	
Johnson City	Washington										2.85		1.17	1.8	9	12	6	13	Ward Crosby.	
Johnsonville	Humphreys	364	14	35.8	- 3.8	61	28	10	21	38	4.23	0.0	1.40	0.5	10	9	6	16	Miss Sallie B. Mathews.	
Kingston	Roane	19	19								4.13	+ 0.08	1.24	1.0	9	13	0	18	H. Crumbliss.	
Knoxville	Knox	977	39	34.4	- 5.3	66	29	17	21	26	4.94	+ 0.78	3.04	1.7	10	8	8	15	U. S. Weather Bureau.	
Lebanon	Wilson	522	1	35.0		63	28	9	21	39	3.31		1.17	1.0	5	6	9	16	D. Logan Fields.	
Lewisburg	Marshall	727	15	36.3	- 5.0	63	28	9	21	38	3.94	- 0.47	1.41	1.3	6	9	8	14	Dr. R. D. Crutcher.	
Livingston	Overton										5.05	+ 1.00	2.04	T.	8	16	3	12	Livingston Academy.	
Loudon	Loudon	816	7								3.81	- 0.80	1.44	2.0	6	7	15	9	Robert W. Clark.	
Lynnville	Giles	770	22	34.3	- 6.2	73	27	14	21	35	5.38		2.20	1.7	10	18	0	13	Col. J. H. Burrow.	
McGhee	Monroe	6	6								3.60		1.50	2.6	13	6	12	13	Allice L. Headrick.	
McMinnville	Warren	1,011	26	35.4	- 5.4	65	29	10	21	34	3.60	+ 0.16	2.83	2.2	11	8	11	12	J. T. Sparkman.	
Maryville	Blount	1,050	14	34.4	- 5.5	65	29	11	21	32	5.19	+ 1.42	0.90	4.0	10	9	14	8	Mrs. F. E. Benedict.	
Mountain City	Johnson	2,486	13	31.0	- 3.0	62	29	- 3	22	49	2.75	+ 0.10	1.74	2.0	7	7	10	14	E. E. Barry.	
Nashville	Davidson	654	39	36.0	- 5.1	65	29	14	25	29	3.92	+ 0.39	1.10		5	10	7	14	U. S. Weather Bureau.	
Newport	Cocke	1,280	20	33.9	- 4.7	68	29	14	14	33	3.96		1.30	1.0	7	9	12	10	Dr. C. T. Burnett.	
New River	Scott	1,215	3								3.30	- 2.35	1.30	1.0	7	9	12	10	Burl W. Buttram.	
Palmetto	Bedford	770	17	36.0	- 5.2	62	28	12	21	33	2.34		1.15	T.	6	11	6	14	Mrs. Ross Woods.	
Pinewood	Hickman		3	35.6		63	27	7	21	43	3.19								Miss Carrie Cash.	
Pope	Perry	13	13	33.6	- 6.5	65	27	5	13	43	2.96	- 0.63	1.58	1.0	9	11	5	15	Fred Beal.	
Rogersville	Hawkins	1,150	25	32.7	- 5.2	66	29	3	21	43	4.54	+ 0.17	2.47	T.	6	8	5	18	S. G. Wilson.	
Rugby	Morgan	1,410	22	32.8	- 4.6	64	29	10	14	36	2.96	- 0.59	1.75		11	7	5	19	W. F. Bell.	
Savannah	Hardin	442	26	40.6	- 1.3	60	17	14	22	40	4.05		2.35	1.5	11	7	5	19	H. O. Eckel.	
Sevierville	Sevier	4	4	34.0		68	29	10	14	45	4.58				5	7	0	18	University of the South.	
Sewanee	Franklin	2,000	14	36.8	- 1.4	62	18	9	21	27	5.42	+ 0.71	0.73	0.2	3	13	8	10	E. H. Hull.	
Sparta	White	920	4	35.6		66	29	10	21	37									Mrs. Lucy E. Breeding.	
Springdale	Claiborne	1,058	20								3.58		1.21	2.5	8	17	4	10	H. A. Boden.	
Springville	Henry	377	7	35.0		61	28	10	21	39	4.11	- 0.60	1.61	2.0	8	12	1	18	J. C. Carr.	
Tazewell	Claiborne	1,075	22	35.6	- 4.1	63	29	12	14	36	3.89	- 1.00	1.50	T.	13	5	16	10	R. T. Moore.	
Tullahoma	Coffee	909	7								3.92		1.50	T.	9	9	4	18	J. K. Roberts.	
Walling	White	753	24	37.1	- 3.7	63	26	11	21	36	4.52	+ 0.22	1.80	3.0	7	7	9	15	H. C. Boyd.	
Waynesboro	Wayne	13	13	36.2	- 4.2	61	28	20	10	35	4.16	- 0.91	1.70	0.5	6	12	7	12	W. R. Wilson.	
Wildersville	Henderson	9	9								4.15		1.30	1.0	8	11	4	16	J. G. Elizer.	
Worsham	Sumner	850	13	36.2	- 4.7	68	28	12	13	30	3.99	- 1.16	3.10	2.0	4	7	12	12	W. P. Watson.	
Yukon	Lincoln																			
Kentucky.																				
Alpha	Clinton	17	17	35.6	- 4.7	56	28	10	25	34	3.47	- 1.24	1.27	T.	5	12	4	15	W. W. Hicks.	
Anchorage	Jefferson	700	10	27.8	- 5.0	56	28	- 3	25	44	3.54	- 0.26	2.06	9.0	5	13	8	10	C. E. Barrett.	
Bardonia	Nelson	637	14	31.2	- 5.0	57	28	4	25	34	4.22	+ 0.25	1.14	11.5	11	12	0	19	G. M. Talbott.	
Beattyville	Lee	650	7	30.2		63	29	8	21	44	3.92		0.84	14.0	13	6	11	14	G. W. Cann.	
Beaver Dam	Ohio	441	8	31.0		60	28	5	9	43	3.19		0.90	9.0	6	11	0	21	T. S. Woodward.	
Berea	Madison	1,070	10	31.5	- 4.4	61	29	11	14	34	3.05	- 0.93	1.10	8.0	12	9	9	13	C. F. Rumold.	
Bowling Green	Warren	500	22	33.2	- 5.1	58	28	5	25	35	3.12	- 1.05	0.97	5.8	8	13	1	17	Mrs. L. G. Causey.	
Burnside	Pulaski	773	20								3.90	- 0.15	0.94		7	11	5	15	G. M. Estes.	
Cadiz	Trigg	8	8																F. T. Street.	
Calhoun	McLean	397	8	33.7		60	28	12	21	35	3.59		1.79		6	9	13	9	W. A. Taylor.	
Cattlettsburg	Boyd	544	22								3.48	+ 0.99	1.06	14.0	13	11	2	18	Mrs. Martie M. Bruns.	
Earlington	Hopkins	370	21	31.9	- 7.3	62	28	11	21	35	2.61	- 1.25	0.87	4.0	5	14	2	15	J. B. Atkinson.	
Edmonton	Metcalfe	600	20	32.0	- 5.6	60	29	3	25	35	3.27	- 1.00	0.80	3.1	9	8	8	15	Miss Lee Ray.	
Eubank	Pulaski	1,177	17	32.1	- 3.6	60	29	10	21	33	2.97	+ 0.15	0.80	0.6	9	6	5	20	Mrs. Katie Payne.	
Falmouth	Pendleton	530	22								3.84	+ 0.73	1.19	14.0	10	10	2	19	J. V. Oldham.	
Farmers	Rowan	668	6	29.8		61	29	4	14	40	3.09		0.65	11.0	12	4	9	18	Miss Gertrude Sorrell.	
Frankfort	Franklin	560	20	29.6	- 8.1	50	27	7	25	34	2.14	- 1.22	0.53	7.2	12	11	5	15	J. H. Roberts.	
Franklin	Simpson	691	18	34.6	- 5.8	58	29	10	25	33	3.89	- 0.28	1.71	2.5	5	5	17	9	J. E. Newman.	
Greensburg	Green	581	18	30.4	- 6.0	60	29	3	25	42	2.									



TABLE 1.—Climatological data for December, 1910. District No. 3—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.				Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of overcast days.		
Indiana—Continued.																				
Cambridge City.....	Wayne.....	941	19	25.3	- 4.1	53	28	-10	25	44	2.59	- 0.27	0.67	8.3	9	8	0	23	w.	Chas. Lemberger.
Columbus.....	Bartholomew.....	632	27	27.3	- 5.3	56	28	- 1	25	36	2.00	- 0.81	0.44	7.5	9	12	2	17	sw.	John A. Perry.
Connersville.....	Fayette.....	769	28	27.2	- 4.5	54	28	- 3	25	27	1.71	- 1.07	0.55	2.3	6	9	11	11	w.	H. T. Swindler.
Delphi.....	Carroll.....	668	25	24.1	- 4.0	42	27	5	25	35	2.18	- 0.32	1.25	9.0	9	7	8	16	.....	L. A. Higginbotham.
Eminence.....	Morgan.....	782	5	26.6 <sup>b</sup>	.....	50	28	0	25	30 <sup>b</sup>	1.47	.....	0.58	4.3	6	15 <sup>b</sup>	10 <sup>b</sup>	4 <sup>b</sup>	nw.	E. E. Kelso, M. D.
Evansville.....	Vanderburg.....	386	34	32.5	- 3.0	57	28	15	24	28	2.94	- 0.80	1.44	6.0	6	10	15	6	nw.	U. S. Weather Bureau
Farmersburg.....	Sullivan.....	.....	12	28.4	- 3.0	49	28	7	21	32	0.58	- 2.28	0.25	3.5	5	9	10	12	nw.	Maurice Yeager.
Greensburg.....	Randolph.....	1,101	28	27.0	- 4.9	47	27	0	25	35	2.08	- 0.59	0.55	8.5	8	5	5	21	sw.	W. J. Davisson.
Greensburg.....	Hancock.....	905	7	27.5	.....	50	28	1	25	27	1.79	.....	1.04	5.5	7	0	22	9	s.	Prof. W. C. Goble.
Greensburg.....	Decatur.....	954	14	27.1	- 3.6	53	28	4	25	27	1.68	- 1.25	0.74	8.0	5	12	11	8	sw.	Chas. H. Ewing.
Huntingburg.....	Dubois.....	.....	2	30.8	.....	57	28	9	25	29	2.49	.....	1.30	.....	3	.....	.....	.....	.....	H. Dufendach.
Huntingburg.....	Huntington.....	741	17	25.2	- 3.3	43	18	4	25	27	2.18	- 0.61	1.00	9.3	12	9	3	19	sw.	Chas. McGrew.
Indianapolis.....	Marion.....	822	39	27.0	- 5.0	50	28	8	12	23	1.73	- 1.31	0.65	4.0	9	7	8	16	s.	Section Center.
Jeffersonville.....	Clark.....	455	28	30.6	- 6.2	57	28	9	25	25	3.19	- 0.21	1.93	6.0	10	10	7	14	w.	John C. Loomis.
Judyville.....	Warren.....	.....	3	24.4	.....	45	17	- 3	8	34	1.32	.....	0.40	1.2	9	9	4	18	nw.	Dale R. Warrick.
Kokomo.....	Howard.....	840	18	24.8	- 4.9	44	28	- 2	25	25	1.38	- 0.93	1.00	1.8	4	5	6	20	nw.	P. H. Robertson.
Lafayette.....	Tippecanoe.....	617	31	24.6	- 4.7	44	28 <sup>†</sup>	3	12	34	1.82	- 0.76	1.25	3.0	6	8	2	21	a.	Wm. J. Jones, Jr.
Logansport.....	Cass.....	620	30	25.8	- 4.5	45	31	5	25	28	2.16	- 0.42	1.20	5.8	9	11	1	19	e.	Chas. Massena.
Madison.....	Jefferson.....	460	18	30.4	- 4.4	56	28	6	25	27	2.87	- 0.48	1.09	6.6	8	13	7	11	sw.	Dr. J. Cooperider.
Marengo.....	Crawford.....	363	28	28.7	- 3.3	56	28	3	25	30	3.09	- 1.13	0.95	12.4	8	12	11	8	w.	J. M. Johnson.
Marion.....	Grant.....	814	24	24.9	- 4.8	43	28	3	25	25	2.23	- 0.25	0.95	10.4	10	5	10	16	sw.	James F. Hood.
Markle.....	Huntington.....	814	15	23.5	- 3.8	42	28	- 2	25	35	2.10	- 0.33	0.50	10.0	6	9	6	16	sw.	I. S. Shideler.
Maury.....	Rush.....	980	30	23.6	- 4.2	52	28	- 5	25	31	1.92	- 1.18	0.50	10.2	9	8	9	14	sw.	Elwood Kirkwood.
Monticello.....	White.....	674	.....	.....	.....	.....	.....	.....	.....	.....	1.32	.....	1.03	0.5	6	17	7	7	nw.	J. E. Loughry.
Moore Hill.....	Dearborn.....	.....	9	27.2	.....	54	28	5	25	28	2.16	.....	0.70	10.2	9	11	1	19	nw.	W. S. Bigney.
Mount Vernon.....	Posey.....	410	24	32.4	- 3.2	61	28	12	21	32	2.36	+ 0.09	0.95	5.0	6	16	3	12	nw.	Chas. M. Spencer.
Paoli.....	Orange.....	611	13	29.2	- 3.5	58	28	2	25	30	2.41	- 1.26	0.96	6.0	6	10	12	9	nw.	James A. Gillum.
Princeton.....	Gibson.....	481	28	31.0	- 3.9	55	28	10	25 <sup>†</sup>	31	2.10	- 0.91	1.40	4.5	4	19	4	8	.....	Elisha Jones.
Richmond.....	Wayne.....	972	25	25.8	- 4.6	51	28	- 8	25	30	1.79	- 0.88	0.70	6.4	7	4	16	11	.....	Walter Vossler.
Rochester.....	Fulton.....	775	5	25.6	.....	41	15	5	25	24	2.08	.....	1.48	9.5	5	9	3	19	.....	G. P. Keith.
Rockville.....	Parke.....	722	24	26.0	- 5.4	48	28	5	12	24	1.11	- 1.39	0.53	2.0	5	12	3	16	nw.	Dr. W. N. Wirt.
Rome.....	Perry.....	370	7	32.0	.....	57	28	7	25	36	3.23	.....	1.65	5.0	8	13	5	13	w.	Adam Anspach.
Salamonia.....	Jay.....	.....	5	24.4	.....	46	28	- 8	25	29 <sup>†</sup>	1.63	.....	0.54	6.5	9	5	0	26	nw.	Chas. V. Skinner.
Salem.....	Washington.....	717	17	28.1	- 4.7	55	28	0	25	27	2.43	- 1.06	0.88	4.0	5	11	11	9	nw.	Emmett S. Allen.
Scottsburg.....	Scott.....	570	16	30.8	- 3.8	58	28	8	25	24	2.50	- 0.82	1.39	5.5	6	6	12	13	w.	Frank H. Park.
Seymour.....	Jackson.....	610	23	29.6	- 4.5	58	28	7	25	30	2.17	- 0.92	0.85	5.3	7	9	14	8	w.	J. Robt. Blair.
Shelbyville.....	Shelby.....	.....	6	26.4	.....	52	28	- 6	25	29	1.61	.....	0.68	3.7	6	4	17	10	nw.	Edgar G. Hodson.
Sterre Haute.....	Vigo.....	498	20	29.0	- 4.6	51	28	10	12	25	2.21	- 0.42	1.36	2.0	7	18	2	11	nw.	Prof. R. G. Gillum.
Veedsburg.....	Fountain.....	612	12	27.0	- 3.0	48	28	4	12 <sup>†</sup>	30	1.57	- 0.42	0.90	1.5	7	13	6	12	se.	L. A. Culver, Jr.
Vevay.....	Switzerland.....	525	29	30.6	- 5.3	55	28	5	25	25	2.50	- 0.52	1.50	9.0	5	8	7	16	nw.	Miss Frederica Boerner.
Vincennes.....	Knox.....	431	18	29.8	- 3.0	52	28	9	21	32	2.40	- 0.86	0.70	1.0	5	14	3	14	w.	Garrett V. List.
Washington.....	Daviess.....	484	14	25.4 <sup>a</sup>	- 7.3	57	23	5	24	46 <sup>a</sup>	1.76	.....	0.65	5.3	4	14 <sup>a</sup>	0 <sup>a</sup>	15 <sup>a</sup>	n.	John T. Harris.
Whitestown.....	Boone.....	.....	2	24.8	.....	45	28 <sup>†</sup>	5	12	27	1.68	.....	0.85	5.0	7	8	15	8	w.	Clyde O. Laughner.
Winona Lake.....	Kosciusko.....	.....	3	24.6	.....	42	27 <sup>†</sup>	2	9	26	2.12	.....	1.14	12.8	13	2	15	14	sw.	Rev. Albert A. Young.
Worthington.....	Greene.....	526	28	28.5	- 4.4	50	28	5	25	28	2.00	- 1.20	0.90	3.0	7	5	18	8	nw.	D. W. Soliday.
Illinois.																				
Albion.....	Edwards.....	531	19	29.6	- 3.9	54	28	9	21	30	1.79	- 1.44	0.80	1.0	5	17	1	13	nw.	B. F. Michels.
Charleston.....	Coles.....	720	25	27.4	- 4.7	48	17 <sup>†</sup>	5	21	30	1.14	- 1.24	0.60	1.8	5	13	6	12	nw.	Jacob B. Daisy.
Danville.....	Vermilion.....	604	9	27.9	.....	46	17	6	12 <sup>†</sup>	28	1.61	.....	1.13	1.4	8	13	2	16	nw.	A. T. Lemon.
Equality.....	Gallatin.....	421	12	33.0	- 3.1	60	28	10	8 <sup>†</sup>	34	3.05	- 0.43	1.57	9.0	7	17	4	10	w.	Dr. L. W. Gordon.
Fairfield.....	Wayne.....	495	17	29.6	- 4.2	54	28	8	21	30	1.91	- 0.90	0.76	T.	3	21	0	10	nw.	Geo. A. Tromly.
Flora.....	Clay.....	495	24	30.8	- 3.0	52	28	8	21	33	1.27	- 1.49	0.63	T.	3	18	2	11	nw.	Joas S. Peak.
Golconda.....	Pope.....	500	32	32.0	- 5.0	57	26	9	23	37	3.52	- 0.05	1.60	5.0	7	14	8	9	nw.	Dr. D. Lawrence.
Hoopesboro.....	Vermilion.....	715	8	26.0	.....	42	17 <sup>†</sup>	2	12	25	2.07	.....	1.49	3.6	11	13	3	15	.....	S. F. Haskinson.
McLeansboro.....	Hamilton.....	462	27	32.4	- 3.2	60	14	10	20	30 <sup>a</sup>	2.06	- 0.96	0.78	2.0	5	18	10	3	w.	C. C. Judd.
Martinsville.....	Clark.....	630	22	26.6 <sup>b</sup>	- 6.3	46	19	6	21	35 <sup>b</sup>	1.15	- 1.03	1.00	1.5	3	9	5	17	w.	G. M. Daugherty.
Mount Carmel.....	Wabash.....	424	9	29.3	.....	55	28	12	21	29	2.34	.....	0.66	3.2	7	13	5	13	nw.	Mrs. H. M. Phillips.
New Burnside.....	Johnson.....	556	15	31.8	- 3.8	60	28	10	13	32	2.93	- 0.32	1.07	5.0	3	13	12	6	w.	Geo. Harris.
Obey.....	Richland.....	486	23	31.0	- 3.8	52	27 <sup>†</sup>	8	21	30	1.78	- 0.98	0.91	4.6	6	14	7	10	nw.	Victor E. Phillips.
Palatine.....	Crawford.....	500	28	29.2	- 3.6	46	17	9	21	30 <sup>a</sup>	2.19	- 0.69	0.80	3.0	7	9	7	15	nw.	Duane Shaw.
Paris.....	Edgar.....	600	17	25.0	- 3.8	45	27	7	12 <sup>†</sup>	31	1.25	- 1.13	1.10	1.5	2	17	5	9	nw.	H. P. Twyman.
Philo.....	Champaign.....	700	26	31.8	- 4.3	45	17	3	12	28	1.60	- 0.63	0.76	0.8	5	13	6	12	nw.	H. A. Burr.
Rantoul.....	.....do.....	768	19	26.2	- 2.8	47	17	3	12	29	1.57	- 0.54	1.28	1.7	5	14	5	12	nw.	Wm. Breiner.
Robinson.....	Crawford.....	500	10	30.4	- 1.9	52	28	10	21	30	1.88	- 1.38	0.60	T.	4	10	8	13	nw.	A. P. Woodworth.
Sumner.....	Lawrence.....	459	4	29.8	.....	51	28	10	21	27	1.90	.....	0.74	T.	5	11	5	15	s.	O. A. Fyffe.
Tuscola.....	Douglas.....	644	17	27.8	- 1.7	53	17	5	12 <sup>†</sup>	39	1.51	- 1.05	0.97	1.0	5	17	4	10	w.	E. W. Lester.
Urbanaj.....	Champaign.....	725	8	25.6	.....	46	17	4	25	28	1.69	.....	0.94	1.0	5	8	15	8	nw.	Prof. J. G. Moser.

<sup>a</sup>, <sup>b</sup>, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

<sup>†</sup> Precipitation included in that of the next measurement.

<sup>\*\*</sup> Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.

<sup>†</sup> Also on other dates.

<sup>‡</sup> Separate dates of falls not recorded.

<sup>§</sup> Data are from standard instruments not supplied by the U. S. Weather Bureau.

<sup>||</sup> Instruments are read in the morning; the maximum temperature



TABLE 2.—Daily precipitation for December, 1910. District No. 3, Ohio Valley.

Stations.	River basins.	Day of month.																															Total.		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
New York.																																			
Allegany	Allegheny	.08	.05	.03	T.			.04	.01	.10		.15	.03	.02		.08			.04	.04	.18			.04	.22	.04	.13		.85	.25	.35	.05	2.78		
Bolivar	do.	.15	.03	.06				T.	T.	.02		.23	.04			.07			T.	.10	.05	T.	T.		.15		.10		.45	.13	.72		2.30		
Franklinville	do.																																		
Olean	do.	.12	.04	.05	.03					T.	.08		.20	.07	.02		.10				.10	.08	.06			.32		.10	T.		.43	.80	T.	2.59	
Pennsylvania.																																			
Aleppo	Ohio	.18	.10		.05	.10	.40														.15	.06			.25	.50		T.		.01	.01	.60	T.	2.40	
Baldwin	Allegheny	.15	.10	T.		.10		.05	.10			.15	.23	.18	T.		T.				.15	2.00	1.00	T.	.28	.78	T.			.48	.32	.90		6.97	
Beaver Dam]]	Ohio	.08	.10	T.	.09	T.	.02	T.				.10	.01	T.			.03				.02	.04	.01			.68	.04	.04		.13	.15	.02	.03	2.59	
Bradford	Allegheny	.07		.06						.03	.04		.15	.03			.10				.02	.16	.18	T.	T.	.13	.10	.03	.10		.48	.40	.39	T.	2.47
California	Monongahela																																		
Clarion	Allegheny																																		
Claysville	Ohio	.12	.03	T.	.04	.12	.50	T.				.08	.05	T.	T.		T.				.10	.05	T.		.16	.52	T.	T.		.21	.20	.69		2.77	
Confluence]]	Youghiogheny	.06	.14	.02	.04	T.	.40	.14					.24	.02	.02	T.		.08			.12	.10	.06	T.		.46	T.	T.		.10	.06	.26	T.	2.22	
Davis Island Dam]]	Ohio	.05	.07	T.	.05	T.	.23	.02	.01				.16	.03	T.	T.		.05			.02	.06	.01	T.		.75	T.	.06	.02	.12	.11	.85	.01	2.67	
Derry Station	Allegheny	.17	.04	T.		.08	.44					.08		.12			.05				.06	.16				.45	T.			.17	.16	.67		2.84	
Franklin	do.	.24	.04	.04	.06					T.	.04	T.		.18	.14	.04			.02		.12	.06	.06			.80	.04	.10		.10	.60	.88	.01	3.57	
Freepoint]]	do.	.15	.07	.03	.05	T.	.15	.01	.04				.17	.04	T.			.02			.12	.09				.95	T.	.13	T.	.08	T.	.84	.03	2.85	
Greensboro	Monongahela																																		
Greensburg	Youghiogheny	.31	.04	T.	.08	.07	1.01	.03	.01			.13	.08	T.	.20		.10	.04			.03	.11	.05	T.		.12	.41	T.	.06		.08	.19	.55	T.	3.70
Greenville	Ohio	.16	.10	.02	.05			.02	.01	T.		.13	.14	T.	T.	T.	T.	T.	T.	T.	.14	.10	.09	T.		.50	.12	T.	.06		.54	.63	.19	T.	3.21
Grove City	do.	.24	.10	T.	.08			.02	.01	T.		.05	.10	T.			.02	T.			.09	.07	.04			.26	.53	.04	.05		.33	.33	.50		2.96
Hers Island Dam]]	Allegheny	.08	.11	T.	.05	T.	.23	.01	.01	T.		.11	.03	T.			.03				.03	.05	T.	T.		.88	T.	.05	.03	.14	.09	.85	T.	2.80	
Indiana	do.	.30	.10	T.		T.	.23	.25	.10			.10	.25	.28	.05		.05				.14	.30	T.	T.		.12	.54	.05	.38		.40	.23	.35		4.21
Irwin	Monongahela	.05	.04		.07	.07	.07	T.	T.			.07	.06	T.	T.	T.		.07			.07	T.				.15	T.				.75	.19	.52	T.	2.10
Johnstown	Allegheny	.08	.03	.13	.03	.50	.12	.05	T.	.01	.25	.10	.07	T.	T.		.12	T.		.04	.22	.14	.10		.32	.17	.07	.04		.14	.62	.05		3.31	
Lock No. 4]]	Monongahela	.08	.03	T.	.05	T.	.45	.25	T.			.05	.02	T.			.05				.14	.05	T.			.72	T.		T.	.03	.07	.74		3.97	
Lycippus	Allegheny	.21	.06	T.	.05	.07	.98	T.		.09	.11	.17	.09	T.			.13	.09			.10	.08				.31	.61		.06	T.	.09	.17	.70	3.97	
Parker's Landing]]	do.	.20	.10	.06	.10	T.	T.	T.	.12	T.		.20	.10	.04			.04	T.			T.	.12	.04	T.		.61	.80	.10	.20	T.	.08	.44	.76	.06	3.56
Pittsburg	Ohio	.18	.06	.04	.03	.03	.24	.04	.01		.15	.05	T.	T.			.04				.05	.04	T.		.69	.05	T.	.07		.23	.71	.16		2.87	
Saegetown	Allegheny	.26	.11	.05	.06			.05	.05	.09	.04	.16	.20				.10	.03		.08	.20	.25	.34	.05	.20		.05	.15		.30	.31		.33	3.46	
Saltsburg]]	do.	.10	.12	.02	.08	T.	.28	.10	.02			.16	.04	.04	T.		.04				.04	.10	.04	T.		.82	T.	.04	.08	.12	.10	.68	.04	3.06	
Skidmore	Ohio	.50	.10	.10																	.10					.25	.20			.75	.25	.20		2.45	
Somersburg	Youghiogheny	.27	.12			1.50	.11				.25	.62	.12	.21			.20			.10	.20	.24				.25				.21	.15	.11	.10	4.61	
Springdale]]	Allegheny	.09	.07		.07		.25		.04			.14					.02				.02	.03				.83			.13		.04	.12	.78	.01	2.44
Uniontown	Monongahela		T.		.10	T.	1.10	.10			.10	T.	.20	T.	.72	T.					.20					.73	.04			.03	.40			3.62	
Warren	Allegheny	.30						.10	.16	.16		.10	.20	.10			.24				.10	.06		.08	.16	.04	.20	.08		.50	.16			2.74	
West Newton]]	Youghiogheny	.22	.20	T.	.10	T.	.80	.40	T.			.10	.06	T.			T.	.10			.04	.16	T.	T.		.78	T.	.06	.02	.02	.10	.66	T.	3.82	
Maryland.																																			
Deer Park	Youghiogheny	.30	.20			.40	.40					.50					.60				.40	.20			.25					.15		.20		3.60	
Grantville	do.	.20	.20	T.	T.	.30	.50	.10			.20	.20	.10		.10				T.		.40	.10			.20	.05	.05			.20		.31		3.21	
Oakland	do.	.45	.26	.04		.10	.04				*	.35					.03			.01	.03	.37	.06		.04	.28	.01	T.			.28			2.35	
West Virginia.																																			
Bancroft]]	Great Kanawha	.30	T.	T.	.10	.40	.32	T.				.08	.05	T.							.10	.05			.30	.70				.04	.07	.72	.04	2.97	
Beckley	do.	.40	.05	.30			.90	.12	.07			.56		.05							.20									.70				3.65	
Bens Run	Ohio				.10	.30	.70				.10		.05	.04						.12	.06			.40	.27		.15			.32	.46		3.07		
Bluefield	Great Kanawha	T.				.55	.45				.20								.40						.20					.20			2.75		
Brandonville]]	Monongahela																																		
Buckhannon	do.	.80		T.		.10	.15	.10			.05	T.		.15		.10					.20				.12	.35					.55			2.67	
Cairo	Little Kanawha						1.00	.20													.60	.20			.05	.40				.15				2.60	
Central Station	Middle Is. Creek	*	*	.25	.08	.17	.30	T.		.05	T.	.01	T.		T.				T.		.06	.08	.02		.15	.37	T.	.04		T.	.02	.64		2.24	
Charleston]]	Great Kanawha	.16	.16			.20	.65	.25		T.	T.									.08	T.	.15		.01	.57				T.	.08	.90		3.21		
Creston]]	Little Kanawha	.10	.20		.10	T.	.60	.15	.10		.21	T.	T.	T.	T.					.10	.05	.05		.09				T.	.12	.74	T.		3.21		
Cuba	Sand Creek	.15	T.	T.	.05	.07	.90	T.			T.		T.	T.	T.				T.		.07	.05			.25	.30			.08	.20	.74	T.	2.86		
Davis]]	Monongahela																																		
Elizabeth]]	Little Kanawha	.10	.08		.07	.12	.62	.06				.05		.01						.03	.01	.02			.59				.01	.06	.71		2.54		
Elkhorn	Big Sandy	.15	.08	.38	T.	.10	.05	.03			T.		.02	T.						.02	T.			.02	T.				.02	.05	.25		2.45		
Elkins	Monongahela	.38	.03	.01	.06	.28	.13	.03	T.		.07	.04	.09	.03		.05			.21	.01	.23	.05		.34	.03	.01		T.	.20	.44		2.72			
Fairmont]]	do.	.40	T.	T.	.06	T.	.52	.10	T.			.04	.02	.01	T.		.04			.04	.08	.06			.32	T.		T.	.02	T.	.60	T.	2.55		
Glenville]]	Little Kanawha	.40			.10	.30	.53	T.	T.			.15	.05	.05	.05		T.				.15				.53				.10	T.	.83		3.28		
Grafton	Monongahela	.30	T.		.10	.10	.60	.10			T.	.05	.05			T.	.40		T.		.67	.15			.31	T.			.51		.60		3.94		
Green Sulphur Springs	Great Kanawha	.11	.05		.05	.27	.44	.03			.10		T.	T.						.10	.09	.04			.15										



TABLE 2.—Daily precipitation for December, 1910. District No. 3—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Ohio—Continued.																																		
Cambridge.	Muskingum.																																	
Camp Dennison.	Ohio.	.05	T.	.05	.10	.02	T.				.10									.10	T.			.25	T.				.59	.62	.43	.10	2.30	
Canal Dover.	Muskingum.	.20	T.		.10	T.					.03									.05	T.	.10		.32	.28	T.			.14	.83	.27		2.03	
Canton.	do.	.13			.10						.10	.06	.03							.04	.03	.03		.60				.37	.11	.81		2.52		
Cardington.	Scioto.																																	
Chillicothe II.	do.		.18																			.04			.60				.05	*	1.30		2.37	
Cincinnati.	Ohio.	.08		.10		.04	.01				.02	T.											.52					.12	.07	1.09	.01	2.15		
Circleville II.	Scioto.	.20	T.		.10		.08	.05			.09	T.										.04	.05	T.		.49	T.		.20		1.30		2.55	
Clarion.	Ohio.	.10	T.		.20	.08	.25				.35	.02	.02	T.		.02				T.	.10	.05		.40	.50	T.	.15		.18	.22	.75		3.39	
Columbus.	Scioto.	.02	T.	.12	T.	.02	T.				.07	T.	.01							.02	.04	.04	T.	.08	T.			T.	.33	.96			2.2	
Coshocton II.	Muskingum.											.08	.04									.15	.01		.70				.40	.25	.60		2.1	
Dayton.	Great Miami.	.01	T.	.07	.04	T.		T.			.11	T.								T.	T.	T.		.42	T.				.48	.76	.06		1.95	
Delaware.	Scioto.	.06	T.	.04	.06	T.	T.	T.			.08	T.								.05	T.	.12	T.		.48	T.		T.		.50	.07	.16		2.22
Demos.	Ohio.	.05	T.	T.	.10	.01	.40	.01			.05	.06	.03	.01		.01				T.		.10	.05		.50	.09			.47	.63	.46		3.07	
Dennison.	Muskingum.	.11			.09	.04	T.				.04	.06	.02	T.		T.				T.	.03	.04	.02		.30	.37	.02	.04		.30			2.38	
Frankfort.	Scioto.	.14	T.	.02	.08		T.				.07	.05										.08	.14	.06		.35	.11			.52	1.05	.03		1.95
Granville.	Muskingum.	.10	T.	.01	.05	.10					.30	T.								T.		.20	T.		.50	.03	T.		.50	.60	.22		3.70	
Gratiot.	do.	.05	.02	T.	.10						.20	T.								.15	T.	.20	T.		.40	.10	T.			.50	.70	.16		2.68
Green.	Ohio.	.10	.06	T.	.02	.10					.20	T.								T.	T.	.20	T.		.40	.10	T.			.50	.70	.16		2.15
Green Hill.	Muskingum.	.11	.02	T.	.09	T.	1.00				.14	.08	.05	.02	T.		.01	.01		T.	.07	.02	T.		.37	.12	T.	.06		.40	.59	.14		2.07
Greenville.	Great Miami.	.08		.14																														



Stations.	River basins.	Day of month.																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<b>Tennessee.</b>																																		
Ashwood	Tennessee				.15	.90	.10																	.95			.10	T.		1.25			3.42	
Benton	do.	T.	T.		T.	2.87	.15				T.					T.			.10		T.		.28			.30			T.	.72			4.42	
Bird's Bridge	do.	T.	.01		.15	.80	1.71	.10									.03		.09	.10				.21						.47	T.		4.67	
Bluff City	do.	T.	T.		.16	.36	1.00	.08					.04							.18	.04	T.		.90		.16		T.		1.50		.06	2.63	
Byrdstown	Cumberland					.95	.10																.04	.60				T.	.04	T.	.98		3.42	
Carthage	do.					.60	.47																		.60								2.91	
Cedar Hill	do.					.56	.85																	.20	.55					.49	1.09		3.85	
Celina	do.					.70	.55																.03				.10	.06	T.	1.00			2.78	
Centre Point	Tennessee				.03	2.10	1.60	T.					.02						.25	.02				.15	.10				.12			.40	4.51	
Charleston	do.			.01	.53	2.89	.06				.01							.01	.22					.66			.04	.02		.38	.01	.16	4.51	
Chattanooga	do.				.04	.60	.15																	.68					.46	1.01	.10		5.20	
Clarksburg	Cumberland					.15	.75	1.55	.05		.10								.10	.35	T.	.10		.10	.65			.45	.05	T.	.80		5.20	
Clinton	Tennessee	T.	.03	T.	.08	1.30	1.80	.08										.04	.12	.28				.40			.04	.04	.01	.04	.63		4.53	
Dandridge	do.	T.	.04		.07	4.40	.04				.02								.25	.02	T.			.93	.06		.04	.04	.40	1.72	T.		4.53	
Deatur	do.					.25	.10																	.62				T.	.31	1.03			3.06	
Dickson	Cumberland					.13	.37				T.													.95									5.15	
Dover	do.	T.			T.	1.37					T.													.70					.09		.55		3.40	
Dunlap	Tennessee				.07	3.30	T.				.08								.25		T.			.46						.52	.37		4.08	



TABLE 2.—Daily precipitation for December, 1910. District No. 3—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Indiana.																																	
Anderson.....	W. Fork, White.	.01	T.	.04	T.			T.			.06		T.	T.					.01	T.	T.		T.	.31	T.			.58	.50	.03	1.54		
Bloomington.....	do.	.04	T.		.25	.30	.06				T.								T.	.03	T.	.09	.07	.32	.05	T.		.58	.42	.38	2.50		
Bluffton.....	Wabash.	.10		.10	.03						.15													.97				.97	.27	.10	2.23		
Butler City.....	E. Fork, White.	.06	.07	.51																		.06		.40				.45	.77	.24	2.56		
Cambridge City.....	Whitewater.	.05	T.		.15				T.		.11			T.					.02	T.	T.			.15	.45			.63	.67	.36	2.59		
Columbus.....	E. Fork, White.	.05			.25	.10	.06												T.	T.	T.			.10	.20			.40	.41	.44	2.00		
Connersville.....	Whitewater.	T.	T.	.11				T.			.07								T.	T.	T.			.10				.43	.55	.09	1.71		
Delphi.....	Wabash.	.10		.16							.10									.10				.10	.12			.12	.12	.13	2.18		
Eminence.....	W. Fork, White.	.04		.31		.04				T.	T.										T.			.05	T.			.45	.58		1.47		
Evansville.....	Ohio.	T.		T.	T.	.41													T.		T.		.22	.45			.34	.08	1.44	2.94			
Farmersburg.....	Wabash.				.04	.09					.10								.10	.20				.10				.10	.23		0.58		
Farmland.....	W. Fork, White.	.15	T.		T.						.10			T.					.10	.20				.32	T.			.55	.39	.27	2.08		
Greensfield.....	E. Fork, White.	.05		.10							.05			T.					T.		T.			.45				.49	.55	.10	1.79		
Greensburg.....	do.	.11		.11							T.								T.		T.			.35				.37	.74		1.68		
Huntingburg.....	Wabash.										.06												1.05					1.30	.14		2.40		
Huntington.....	do.	.05	.05	.08	.05						.20		.03						.05	T.	.10	.05		.27				1.00	.25	T.	1.73		
Indianapolis.....	W. Fork, White.	T.	T.	.11							.06		T.						.02	T.	.01		.08	.27	T.			.20	.42	.56	2.18		
Jeffersonville.....	Ohio.	.01		.04		.08	.32				.01									T.	T.			.66				.04	.67	1.93	3.19		
Judyville.....	Wabash.	T.		.11				T.			.30								.04		T.			.01	.12	.12			.40	.10	T.	1.32	
Kokomo.....	do.	.03	T.	T.							T.									T.				.15				1.00	.20	T.	1.38		
Lafayette.....	do.	T.			.14		T.	T.			.14									T.	T.			.08	T.	T.		1.25	.11	.10	1.82		
Logansport.....	do.	.10			.15						.20			T.					.06					.18	.04			1.20	.09	.14	2.16		
Madison.....	Ohio.	.02	.21			.23					.05										.01			.67				.39	1.09	.25	2.87		
Marengo.....	do.	.40		.04		.60					.05								T.		T.		.05	.10				.95	.95	.90	3.09		
Marion.....	Wabash.	.05		.16							.23		.05								.06		.04	.35				.95	.25	.10	2.23		
Markle.....	do.	T.	T.	T.	T.			T.			.40								T.	T.	.20	.20		.50				.50	.30	T.	2.10		
Mausy.....	E. Fork, White.	.06	T.	.15	T.	.02		T.			.05								T.	T.	T.			.50	.05			.47	.48	.18	1.92		
Monticello.....	Wabash.			.11							.11								.04	.01			.02	T.				1.03			1.33		
Moore Hill.....	Ohio.	.05		.12	.10	.06					.03													.50				.40	.70	.20	2.16		
Mount Vernon.....	do.						.04	.04																.42				.45	.95	.46	2.36		
Paoli.....	E. Fork, White.	T.		.04							.62													.62				.65	.96	.13	2.41		
Princeton.....	Wabash.			.05							.35													.35				1.40			.30	2.10	
Richmond.....	Whitewater.	T.		.11				T.			.11								.02	T.	T.			.33				.02	.50	.70	1.79		
Rochester.....	Wabash.	.10		.10							.30		T.							.10	T.			.14				.48	T.		2.08		
Rockville.....	do.			.05							.05													.14				.03	.50	.39	1.11		
Rome.....	Ohio.			T.	.01	.15	.17				.03									T.	T.			.90				.17	1.65	.15	3.23		
Salamonia.....	Wabash.	.05	T.	.02	.03						.10									T.	T.	.02	T.		.60			.54	.34	.13	1.63		
Salem.....	Ohio.	T.		.12		T.	T.				.60									T.	T.			.20				.56	1.39	.05	2.50		
Scottsburg.....	E. Fork, White.	.02	T.	.15		.15					T.									T.				.45	T.			.35	.85	.21	2.17		
Seymour.....	do.	.15	T.	.22		.07	.15				T.									T.				.45	T.			.54	.68	.17	1.61		
Shelbyville.....	do.			.40		.01					T.									.02				.34	.05			.02	.80	.56	.08	2.21	
Terre Haute.....	Wabash.	.05		.10				T.			T.													.02	.15	T.			.90	.25	.10	1.57	
Veedersburg.....	Ohio.	T.		.40							T.									.10				.40				.10			2.50		
Vincennes.....	Wabash.	T.				T.	T.				.50									T.				.50	.20			.70	.50	.50	2.40		
Washington.....	W. Fork, White.					.02					.05										T.	T.		.53				.65	.56	T.	1.76		
Whitestown.....	do.			.13							.05										.05			.16				.85	.24	.20	1.68		
Winona Lake.....	Wabash.	.03	.11	.06	.04			T.			.15	T.	.04							.06	.16	.04	T.	.18	T.	.01		1.14	.10		2.12		
Worthington.....	W. Fork, White.			.03		.07														.02				.03	.53			T.	.42	.90		2.00	
Illinois.																																	
Albion.....	Wabash.					.07																	.08	.38			.46		.80		1.79		
Charleston.....	do.	T.		.09		T.					.10	T.									T.			.10				.44	.19	.32	1.14		
Danville.....	do.			.12				T.			.03								.01		T.			.01	.09	T.		T.	1.13	.20	.02	1.61	
Equality.....	Ohio.	T.			.40	.40					.10	.13												.10	.13			.36	1.57	.09	T.	3.05	
Fairfield.....	Wabash.				T.																			.52				.63	.76		1.91		
Flora.....	do.	T.			T.																T.			.10	T.			.63	.54	T.	1.27		
Golconda.....	Ohio.	T.			.59	.39															.03			.70				.17	1.60	.04	3.52		
Hoopeston.....	Wabash.	.06		.10							.06								.03		.02		.04	.12	.01			1.49	.11	.01	2.07		
McLeansboro   .....	Ohio.			.05																			.48				.46	.78	.29		2.06		
Martinsville.....	Wabash.	T.		.10		T.															.05		T.	T.		T.		1.00			1.15		
Mount Carmel   .....	do.				.06	.06					.02												T.	.60	T.			.66	.62	.32	2.34		
New Burnside   .....	Ohio.	T.			1.01																		T.	T.		T.		.85	1.07		2.93		
Olney.....	Wabash.				.01																		.20	.26			.40		.91		1.78		
Palestine.....	do.	T.	T.	.05		.05					.05									</													



TABLE 3.—Maximum and minimum temperatures for December, 1910. District No. 3, Ohio Valley.

Date.	Pennsylvania.				West Virginia.																Ohio.							
	Greenville.		Pittsburg.		Charleston.		Elkhorn.		Elkins.		Glenville.		Huntington.		Morgantown.		Parkersburg.		Wheeling.		Canton.		Cincinnati.		Columbus.		Dayton.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	33	26	34	24	28	22	28	17	24	19	29	22	29	23	25	20	31	24	34	24	37	26	28	21	31	23	28	22
2....	35	22	28	23	31	25	25	19	25	20	38	24	33	23	28	22	30	26	34	25	36	24	33	26	30	26	31	25
3....	33	22	31	23	36	27	31	16	29	21	36	26	38	27	32	21	33	28	38	30	34	26	33	28	31	26	31	27
4....	40	20	34	26	46	31	42	25	32	16	39	29	40	28	34	21	36	28	40	26	39	26	33	25	34	28	37	28
5....	32	27	33	27	38	30	43	32	35	14	35	31	34	31	33	22	34	28	34	29	34	25	36	27	34	28	36	28
6....	29	19	30	20	38	30	40	25	31	22	35	28	34	30	31	24	32	25	34	27	29	26	29	24	30	17	30	22
7....	25	11	25	19	30	22	33	22	23	21	35	23	27	22	24	20	27	22	28	22	26	20	33	23	28	17	31	21
8....	25	19	23	19	35	22	38	20	31	22	35	20	34	19	30	22	32	13	34	22	33	20	34	21	29	17	31	17
9....	29	16	24	15	35	16	37	20	29	6	32	2	31	10	25	4	25	1	30	8	34	13	30	19	25	14	31	11
10....	27	-2	34	14	40	25	46	23	40	15	38	15	40	10	34	4	37	15	35	5	30	12	44	23	36	18	36	19
11....	30	24	32	25	42	30	45	20	32	24	40	30	36	22	35	18	35	24	32	7	30	17	37	18	31	19	33	21
12....	30	5	25	21	43	16	38	17	26	17	32	20	27	16	28	18	25	18	27	22	31	21	29	14	25	16	27	12
13....	30	-4	25	14	43	22	25	16	23	14	30	18	31	17	24	11	29	17	30	10	31	17	28	19	28	13	30	16
14....	34	11	32	17	43	16	42	11	38	1	38	5	37	12	32	12	26	9	36	13	36	17	40	18	35	16	38	19
15....	33	15	36	16	43	28	42	21	38	20	40	21	43	12	33	12	40	22	37	19	35	18	41	24	37	18	36	23
16....	22	10	22	11	40	20	43	28	23	8	38	13	28	19	37	5	24	14	26	5	30	8	30	20	23	12	30	15
17....	30	-3	34	11	44	16	48	16	30	-1	38	8	40	14	39	5	34	10	37	5	36	8	41	19	37	15	41	14
18....	38	3	43	18	50	24	44	32	49	7	49	14	48	15	49	19	46	18	42	5	40	12	44	27	41	25	42	25
19....	38	30	40	27	42	33	40	24	42	29	47	33	38	30	45	29	36	29	34	11	32	25	41	31	35	26	39	28
20....	30	14	27	14	40	23	38	18	31	14	36	22	26	25	30	12	30	20	28	23	35	17	31	19	26	16	29	20
21....	24	5	30	14	25	17	28	13	18	11	25	15	28	18	30	12	24	15	28	13	33	10	32	15	27	15	29	16
22....	31	-4	35	13	42	15	43	6	37	8	37	6	36	12	34	9	34	12	34	5	39	10	40	19	33	16	37	16
23....	39	25	42	35	54	31	45	35	45	34	49	24	39	13	46	30	44	31	40	5	40	14	42	31	36	27	40	30
24....	35	22	36	25	54	30	42	32	38	23	49	29	33	29	46	27	34	24	32	26	35	24	31	18	28	15	30	16
25....	25	18	25	21	38	20	46	34	28	21	36	23	36	19	27	22	24	20	30	22	31	19	28	16	24	14	21	8
26....	30	20	38	23	42	22	48	33	40	22	48	22	44	20	30	20	42	24	37	20	43	19	43	26	40	24	42	21
27....	35	25	39	26	48	31	50	17	45	28	47	29	53	26	43	35	41	27	41	26	37	25	38	20	35	22	36	21
28....	43	21	54	34	63	37	60	35	60	27	65	37	60	26	57	35	58	33	56	30	52	25	57	38	53	35	54	33
29....	41	31	55	32	68	48	65	45	61	45	63	29	64	49	63	50	61	38	49	37	43	34	46	34	44	32	42	33
30....	33	12	32	20	67	33	60	29	48	25	62	30	45	33	61	25	38	26	30	27	34	12	34	25	32	22	33	18
31....	36	-2	35	16	46	23	40	20	43	12	40	15	45	20	39	15	41	21	41	15	40	16	40	23	36	18	36	15
Mns..	32.4	14.8	33.2	20.7	43.0	25.0	41.8	23.3	35.6	18.2	40.7	21.5	38.0	21.6	36.7	20.2	35.3	21.4	35.1	17.9	35.0	18.9	36.3	22.9	32.7	20.3	34.4	20.5

Date.	Ohio.				Virginia.				Tennessee.																Kentucky.			
	Marion.		Waverly.		Big Stone Gap.		Wytheville.		Ashville, N. C.		Decatur, Ala.		Chattanooga.		Johnson City.		Knoxville.		Nashville.		Palmotto.		Sparta.		Waynesboro.		Beattyville, Ky.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	30	24	32	21	29	25	24	19	23	18	40	23	32	25	32	24	29	22	31	21	30	24	31	25	28	20	20	20
2....	30	23	31	27	29	22	24	21	25	18	40	21	38	24	32	24	39	22	37	22	34	22	37	17	30	20	20	20
3....	31	23	33	25	34	23	31	18	37	16	45	20	40	22	38	24	43	23	41	18	45	19	41	18	37	22	22	22
4....	35	23	39	28	40	28	35	26	46	25	61	23	47	27	46	31	45	34	49	34	45	20	50	32	45	17	17	17
5....	36	24	36	30	44	32	36	29	43	35	58	40	57	38	44	37	44	30	54	38	48	25	50	34	35	18	18	18
6....	30	20	30	25	44	28	34	25	43	21	30	29	38	27	42	26	30	24	38	25	32	24	35	24	31	27	27	27
7....	31	11	29	21	29	25	25	21	29	20	35	25	33	26	42	26	37	25	35	19	38	23	40	25	32	21	21	21
8....	30	13	36	19	37	19	33	20	42	30	40	28	48	24	48	22	46	26	46	25	48	18	48	24	43	12	12	12
9....	28	5	32	3	42	19	38	24	44	23	50	25	52	30	43	26	44	24	52	24	48	18	53	23	40	14	14	14
10....	31	10	29	14	41	25	45	21	52	27	53	33	50	30	44	31	36	33	52	31	49	30	55	22	44	17	17	17
11....	32	25	34	21	41	27	37	27	41	31	40	27	50	32	45	31	45	31	47	23	48	30	48	22	42	25	25	25
12....	27	15	31	9	37	18	30	17	33	19	45	20	43	25	38	22	36	23	38	28	44	17	41	30	31	13	13	13
13....	29	8	30	11	34	20	30	18	36	15	38	22	37	22	36	19	39	20	38	16	42	14	39	20	38	13	13	13
14....	36	14	39	7	42	13	39	18	45	13	53	18	49	21	45	19	48	19	47	14	50	13	49	14	44	9	9	9
15....	34	23	45	31	37	15	37	28	46	22	65	30	54	32	43	28	51	36	55	29	52	19	55	28	47	10	10	10
16....	26	7	31	14	40	28	35	21	44	28	52</																	



TABLE 3.—Maximum and minimum temperatures for December, 1910. District No. 3—Continued.

Date.	Kentucky.														Indiana.														Philo, Ill.	
	Bowling Green, Ky.		Earlington, Ky.		Greensburg, Ky.		Lexington.		Louisville.		Maysville, Ky.		Williamsburg, Ky.		Butterville.		Evansville.		Indianapolis.		Kokomo.		Rockville.		Worthington.					
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	28	21	22	21	37	23	24	20	28	23	28	22	33	21	26	18	27	22	27	19	26	18	25	19	27	22	27	20	27	20
2.....	36	17	35	20	38	21	30	22	36	25	33	22	34	22	35	23	34	22	32	24	32	23	30	19	34	18	31	14	31	14
3.....	40	18	41	18	39	18	32	24	33	27	35	24	38	21	31	24	39	27	29	25	29	22	30	24	31	23	32	19	32	19
4.....	43	27	40	24	41	21	38	25	40	29	42	17	43	28	37	13	35	27	32	26	28	17	30	14	31	12	28	10	28	10
5.....	39	34	36	31	37	22	34	27	36	26	37	17	46	31	37	23	35	24	32	21	29	24	31	25	35	25	30	26	30	26
6.....	28	21	30	21	35	22	27	21	28	23	29	28	32	28	30	20	31	22	25	19	26	15	28	16	30	20	28	18	28	18
7.....	33	17	36	19	32	11	25	19	32	25	31	20	34	20	31	21	35	21	32	22	25	13	32	22	34	23	31	17	31	17
8.....	42	19	40	20	45	10	34	18	37	20	36	15	46	18	36	11	39	23	32	15	25	7	29	9	32	10	30	4	30	4
9.....	45	18	46	18	45	12	31	18	37	20	35	6	48	20	38	17	42	23	32	21	30	6	30	18	37	15	35	13	35	13
10.....	45	30	51	19	45	12	41	25	48	28	43	7	50	23	44	23	45	35	39	25	35	19	36	25	42	30	34	26	34	26
11.....	52	25	41	24	44	11	34	22	40	26	40	24	45	24	37	23	38	28	29	13	31	15	28	18	36	20	30	16	30	16
12.....	33	20	43	20	38	16	23	11	28	16	28	8	34	18	30	10	28	17	26	8	24	17	25	5	28	11	23	6	23	6
13.....	38	14	38	14	35	11	24	9	25	17	33	8	34	15	25	14	35	18	26	19	27	15	20	13	27	15	33	6	27	6
14.....	45	14	46	14	47	10	37	12	42	16	40	5	49	11	40	14	42	21	39	18	37	16	34	16	41	13	43	15	43	15
15.....	49	27	47	15	49	10	39	29	45	33	44	6	50	12	43	32	46	32	37	26	36	20	34	25	41	31	40	25	40	25
16.....	50	20	43	19	42	16	29	19	36	25	34	16	44	20	35	20	43	25	32	21	31	18	28	18	38	15	36	13	36	13
17.....	51	18	54	19	53	16	45	19	47	23	42	11	48	11	42	19	50	26	43	20	39	18	45	23	47	22	45	20	45	20
18.....	53	38	51	21	47	15	43	34	45	35	43	14	52	17	44	29	51	33	42	29	35	26	40	26	45	34	37	25	34	25
19.....	50	28	50	29	48	27	38	28	43	31	38	16	46	21	42	30	46	31	39	25	35	28	40	27	42	30	42	29	42	29
20.....	28	27	30	28	49	27	29	17	31	20	27	24	29	27	32	15	32	20	25	14	29	11	28	14	33	17	29	11	29	11
21.....	35	11	37	11	48	9	29	12	33	16	34	16	36	10	40	7	33	16	30	10	29	4	31	7	32	8	30	3	30	3
22.....	51	18	47	12	48	6	40	19	44	24	42	13	44	10	45	17	44	27	39	23	35	10	35	21	41	36	36	19	36	19
23.....	37	33	35	32	48	8	40	26	41	32	38	13	48	24	38	24	38	27	36	26	38	28	35	28	40	30	35	24	35	24
24.....	28	12	29	19	25	10	26	16	32	17	28	18	37	19	28	12	27	15	26	12	30	11	30	12	32	13	24	6	24	6
25.....	40	5	43	15	37	3	29	11	30	12	38	15	43	18	26	2	36	18	31	8	22	-2	28	9	30	5	29	5	29	5
26.....	50	25	47	24	44	3	40	27	46	30	42	16	42	27	42	20	42	32	36	22	34	21	35	24	36	25	36	20	36	20
27.....	55	33	50	24	55	24	47	20	45	24	52	19	55	26	34	14	54	26	37	16	38	17	38	19	39	13	42	15	42	15
28.....	58	43	62	28	57	26	54	47	58	42	60	20	60	31	56	34	57	40	50	34	44	32	48	35	50	36	44	33	44	33
29.....	58	41	45	40	60	47	56	32	47	34	52	42	65	48	45	32	44	34	37	30	35	33	35	32	39	33	34	30	34	30
30.....	42	30	40	27	50	31	34	26	36	28	39	30	45	33	34	20	36	26	30	20	34	16	32	18	37	22	30	18	37	18
31.....	50	20	44	23	48	19	42	24	45	26	45	18	51	19	42	19	43	28	37	20	40	18	39	22	39	20	40	24	40	24
Mns....	43.0	23.4	43.2	21.6	44.1	16.6	35.3	21.9	38.5	24.0	38.5	17.1	43.9	21.7	36.9	19.4	39.6	25.4	33.5	26.4	31.9	17.6	32.5	19.5	36.1	20.9	46.5	17.1	46.5	17.1



**Climatological Data for December, 1910.**  
**DISTRICT No. 4, LAKE REGION.**

Prof. HENRY J. COX, District Editor.

**GENERAL SUMMARY.**

The uniformly cold weather of November, 1910, continued with only slight interruptions during December. The cold was general throughout the district, but it was most pronounced in the watersheds of Lake Champlain and the St. Lawrence, where the month was one of the coldest Decembers on record.

The precipitation was nearly all in the form of snow, except in Ohio and Indiana, and while the combined amounts of rain and melted snow averaged much less than usual, more than the usual amount of snow fell in central Upper Michigan and portions of New York State. The temperature was lower and the snowfall greater in the eastern portion of the district than in December of last year—a month which has often been referred to as having ushered in the "old-fashioned winter" of 1909-10. There were no other unusual features, and the following table summarizes the general conditions in the various portions of the district:

Portions of States lying within District No. 4.	Mean.										Prevailing direction of wind.
	Temperature.	Departure from normal.	Precipitation.	Departure from normal.	Snowfall.	Number of days.					
						0.01 inch or more precipitation.	Clear.	Partly cloudy.	Cloudy.		
Minnesota.....	12.4	-2.6	0.60	-0.55	8.5	7	11	9	11	nw.	
Wisconsin.....	19.7	-2.4	0.86	-0.80	10.9	6	11	8	12	nw.	
Illinois.....	26.4	-2.9	1.32	-0.75	9.2	11	8	8	15	w.	
Indiana.....	24.1	-3.5	1.95	-0.43	10.8	9	7	6	18	sw.	
Upper Michigan.....	18.3	-1.8	1.76	-0.34	19.8	12	6	6	19	nw.	
Lower Michigan.....	22.3	-4.1	1.75	-0.45	18.0	11	5	7	19	sw.	
Ohio.....	24.2	-5.5	2.14	-0.56	12.2	12	6	7	18	sw.	
Pennsylvania.....	26.0	-5.7	2.89	-0.06	24.0	30	2	6	33	s.	
New York.....	17.8	-6.5	2.78	-0.22	24.2	13	7	8	16	sw.	
Vermont.....	14.7	-8.2	2.40	+0.10	17.4	12	6	6	19	nw.	

**TEMPERATURE.**

The month opened with temperature below the normal in all sections, and it was not until the 14th that there was any appreciable moderation. After that date the temperature was more variable, but it was oftener below than above the seasonal normal. The longest period the temperature remained above the average was from the 26th to the 29th, inclusive. The lowest minimum readings occurred on the 30th and 31st in Minnesota, Michigan, Pennsylvania, New York, and Vermont, while in practically all other sections the lowest readings were observed during the second decade. The lowest temperature noted at any station was  $-37^{\circ}$  at Stephen's Mine, Minn., on the 30th. The highest temperatures occurred on the 14th in the western sections and on the 28th in the eastern sections, the highest for the entire district being  $48^{\circ}$  on the 28th at several stations in Ohio. At Canton, N. Y., on the 31st, the temperature ranged from a maximum of  $24^{\circ}$  to a minimum of  $-30^{\circ}$ , the difference being  $54^{\circ}$ , while on the 30th the range at Northfield, Vt., was  $51^{\circ}$ , from a maximum of  $45^{\circ}$  to a minimum of  $-6^{\circ}$ . Almost without exception the daily minimum temperatures were below freezing in all sections during the entire month.

Taken as a whole, the month may be considered one of the coldest Decembers of which there is any record, and in the eastern sections all previous records for low December mean temperatures were broken, the average deficiency in New York State being  $6.5^{\circ}$  and in Vermont  $8.2^{\circ}$ . The

greatest departure at any place in the entire district was  $-10.5^{\circ}$  at Canton, N. Y., and the average for that station for the first 17 days was  $17^{\circ}$  below the normal. In other portions of the district the deficiency was not so pronounced, but it exceeded  $5^{\circ}$  in Ohio and ranged from  $2^{\circ}$  to  $5^{\circ}$  elsewhere.

**PRECIPITATION.**

The total precipitation in the district averaged much less than usual, although there was an excess in a few scattered localities. It was the driest December on record in Wisconsin and Minnesota. In the Lower Lake region and the St. Lawrence Valley the deficiency was not great, the snowfall there being more than usual; in fact, in New York State the snowfall was excessive. In Indiana and Ohio the precipitation was about one-half rain and one-half snow, while in the other sections it was nearly all snow. Along the shore of Lake Superior from Marquette to Whitefish Point the precipitation was greater than usual because of the heavy snows, but this was the only locality in the Upper Lake region where there was an excess of precipitation. While the geographical distribution of precipitation was quite irregular, it was well scattered through the month, although the greatest amount occurred in the third decade.

Where rain fell, it was chiefly on the 23d, 28th, and 29th, and in Ohio and Indiana the amounts on these dates equaled approximately half of the total monthly precipitation.

*Snow.*—The storm of the 28th in Chicago and vicinity was accompanied by snow unusually wet, there being a water equivalent of 0.71 inch in the 4 inches of snow which fell on that day. This storm caused considerable delay to traffic and much damage to telephone and telegraph lines. On the 30th much injury was caused by snow and ice to various electric lines in northern Ohio. In the New York section the snowfall averaged about 3 inches more than that of December, 1909—a month which surpassed the records for many previous years. The greatest total fall was 59 inches, at Adams Center, N. Y.

The ground remained covered throughout the month in all sections, the greatest depths being in the eastern Lake Superior region and portions of New York State.

**ICE IN RIVERS AND HARBORS.**

In Duluth Harbor the ice increased in thickness during the month from 7 inches to 16 inches, and in the harbor of Green Bay approximately similar conditions obtained. At various points along the shore of Lake Superior the thickness of the ice ranged from 6 inches at the beginning of the month to 20 inches at the close, but ice did not form in Marquette Harbor until the 26th. Along the west shore of Lake Michigan the ice was from 6 to 10 inches thick, except that there was no ice of consequence in either the Milwaukee or Chicago Harbors. In Grand Haven Harbor ice formed on the 8th, and during the remainder of the month there was more or less ice, varying from day to day as the wind and temperature changed. Shore ice first formed in Alpena Harbor on the 7th and 8th, and the entire bay was covered by the end of the month. The observer at Port Huron states that Black River was frozen over on the 3d, and that at the close of the month the ice was 9 inches in thickness. The first ice in the St. Clair River was observed on the 16th. Floating ice was noted in the Detroit River after the 1st, and in quiet slips south of the city the ice was 10 inches thick on the 19th. Ice began to form on the Maumee River and Maumee Bay on the 6th, and by the 26th the thickness ranged from 5 to 12 inches. Ice formed on Sandusky Bay on the 2d, and the



entire bay was frozen over by the 5th. The first ice of the season was noted in Cleveland Harbor on the 10th, 2 to 3 weeks earlier than usual, and at Buffalo, and along the Niagara frontier, ice formed exceptionally early. The Genesee River froze over early in the month, and the ice was 8 inches thick on the 31st, while on the same date the ice on Cazenovia Lake and Oneida Lake was respectively 8 and 12 inches in thickness. The Grass River in northern New York was completely frozen over on the 3d, and the ice in Mallets Bay, Lake Champlain, was 12 inches thick on the 28th.

#### NAVIGATION ON THE GREAT LAKES.

The display of storm warnings on the Great Lakes terminated for the season on December 6, and after that date navigation was practically suspended, except between a few points on Lake Michigan. The season of 1910 was especially favorable for navigation, not a single exceptionally severe storm having occurred, and the list of casualties because of stress of weather was consequently much smaller than usual. The number of storm warnings displayed on the Great Lakes was probably smaller than during any previous season in the history of the Weather Bureau.

#### THE GENERAL WEATHER CONDITIONS FOR THE DISTRICT THROUGHOUT THE YEAR 1910.

Moderately cold weather prevailed in January and February, and the snow continued so persistently on the ground that sleighing was continuous during these months from early in the previous December. More than the usual amount of precipitation, chiefly in the form of snow, occurred in January, and the snow and sleet storm of January 12-14 caused great injury to electric wires and to transportation interests. The snowfall, however, in February was deficient, except in the eastern portion of the district. Warm

weather set in early in March and continued until about the middle of April, the warmth of the month of March breaking all previous records. It turned cold, however, about the middle of April and the temperature remained unseasonably low until early in June, the frosts during this period causing great damage to fruit buds and tender vegetation. During the summer months the temperature was somewhat above the normal, while the month of October was warmer than usual in the greater portion of the district, and this was followed by exceptionally cold weather in November and December. The year as a whole was warmer than usual, except in portions of Ohio, New York State, and Vermont, an average excess of 2.3 degrees being noted at Houghton, Mich. Drought conditions prevailed in portions of the district, especially in the Upper Lake region, during most of the year, and the only places where an annual excess was noted were in New York State in the vicinity of Lakes Erie and Ontario.

In the appended table will be found the departures of temperature and precipitation from the normal for the year 1910 for the regular Weather Bureau stations in the district.

Station.	Temperature.	Precipitation.	Station.	Temperature.	Precipitation.
	<i>° F.</i>	<i>Inches.</i>		<i>° F.</i>	<i>Inches.</i>
Duluth, Minn.....	+ 1.2	- 11.29	Toledo, Ohio.....	+ 0.8	- 1.80
Green Bay, Wis.....	+ 2.2	- 1.98	Sandusky, Ohio.....	- 0.1	- 1.54
Milwaukee, Wis.....	+ 1.8	- 10.30	Cleveland, Ohio.....	- 0.1	- 1.20
Chicago, Ill.....	+ 2.1	- 6.42	Erie, Pa.....	0.0	- 2.39
Houghton, Mich.....	+ 2.3	- 7.37	Buffalo, N. Y.....	+ 0.1	+ 5.26
Marquette, Mich.....	+ 1.3	- 2.09	Rochester, N. Y.....	+ 0.4	+ 1.63
Sault Ste. Marie, Mich..	+ 0.3	- 5.87	Oswego, N. Y.....	- 0.1	+ 0.93
Escanaba, Mich.....	+ 1.5	- 4.08	Syracuse, N. Y.....	- 0.1	- 3.57
Grand Haven, Mich.....	+ 0.5	- 8.12	Ithaca, N. Y.....	+ 0.2	- 1.83
Grand Rapids, Mich.....	+ 0.5	- 7.97	Canton, N. Y.....	- 0.5	- 4.88
Alpena, Mich.....	+ 1.9	- 8.61	Burlington, Vt.....	- 1.5	- 1.12
Port Huron, Mich.....	+ 0.3	- 3.87	Northfield, Vt.....	+ 0.3	- 1.19
Detroit, Mich.....	+ 0.3	- 7.17			



TABLE 1.—Climatological data for December, 1910, District No. 4, Lake Region.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing direction of wind.
Minnesota.																				
Duluth.	St. Louis.	1,133	39	12.8	-4.7	36	14	-20	30	0.56	-0.66	0.18	7.3	10	7	15	9	nw.	U. S. Weather Bureau.	
Floodwood.	do.	1,257	6						30	0.82		0.50	8.5	3	15	1	8		M. H. Schussler.	
Stephens Mine.	do.	1,500	3	10.2		36	31	-37	30	0.45		0.20	7.5	6	7	9	15	nw.	Oliver Iron Mining Co.	
Two Harbors.	Lake.	614	16	16.8	-1.8	39	14	-26	30	0.56	-0.36	0.21	12.0	4	9	15	7	nw.	G. W. Watts.	
Virginia.	St. Louis.	1,434	16	9.7	-1.2	33	13	-33	30	0.61	-0.62	0.26	7.0	4	12	3	16	nw.	Oliver Iron Mining Co.	
Wisconsin.																				
Appleton.	Outagamie.	705	11	19.4	-2.1	36	14	-1	8	26	-1.01	0.38	15.2	8	13	10	8	w.	Wm. O. Thiede.	
Ashland.	Ashland.	647	16	18.2	-2.2	38	14	-10	30	0.82	-0.39	0.27	12.0	6	11	7	13	nw.	Sam Wheeler.	
Bayfield.	Bayfield.	635	2	17.0		41	18	-5	21	33 <sup>b</sup>		0.80	24.0	5	10 <sup>b</sup>	0 <sup>b</sup>	13 <sup>b</sup>	nw.	Wm. Miller.	
Cecil.	Shawano.	804	3	18.4		38	14	-8	9	37		0.23	10.5	6	9	16	6	sw.	Louis W. Schmidt.	
Florence.	Florence.	1,293	19	15.8	-2.4	36	14	-12	25	35	-1.00	0.50	5.4	2	8	5	18	nw.	Fred S. Evans.	
Fond du Lac.	Fond du Lac.	800	24	19.0	-2.8	40	15	-7	13	32	-0.74	0.30	10.0	8	11	3	17	nw.	Geo. W. Marshall.	
Grand River Locks.	Marquette.	770	14	20.2		40	14	-11	9	29	-0.98	0.12	10.2	6	12	6	13	nw.	Jerry Parkinson.	
Green Bay.	Brown.	617	24	19.2	-2.1	36	14	-1	9	25	-1.06	0.41	8.6	9	5	10	16	nw.	U. S. Weather Bureau.	
Iron River.	Bayfield.	1,096	1	16.2		34	14	-10	30	0.40		0.20	5.0	2	22	3	6	nw.	Harry C. Tall.	
Kewaunee.	Kewaunee.	590	50	21.4		37	17	0	8	26		0.62	16.6	7	12	8	11	nw.	Eugene V. Kimball.	
Manitowoc.	Manitowoc.	616	59	22.1	-2.8	38	14	0	9	29	-0.87	-0.05	10.5	7	10	9	12	w.	Johanna Lups.	
Menasha.	Winnebago.	764	13							1.16	+0.08	0.32	8.8	7	14	4	13	nw.	Geo. T. Allanson.	
Menomonee Falls.	Waukesha.	842	1	21.0		38	28	-1	21	27		0.30	7.0	9	12	6	13	nw.	Arthur H. Christman.	
Milwaukee.	Milwaukee.	681	40	23.8	-2.2	41	14	-7	9	27	-1.46	0.15	4.6	10	10	5	16	nw.	U. S. Weather Bureau.	
New London.	Outagamie.	762	14	18.2	-1.6	37	14	-8	9	30	-0.60	0.25	15.0	6	10	4	17	nw.	Aug. H. Pape.	
Oconto.	Oconto.	590	19	19.2	-3.4	41	18	-4	25	31	-0.20	0.45	10.0	7	6	18	7	w.	Wm. K. Smith.	
Oshkosh.	Winnebago.	744	21	18.5	-4.4	38	13	-6	8	28	-0.67	0.28	11.0	4	21	6	4	sw.	Evan Vincent.	
Pine River.	Wausau.	900	15	18.0	-2.7	36	27	-10	9	31	-0.63	-0.77	0.20	9.4	8	6	14	11	nw.	George H. Carpenter.
Plum Island.	Door.	588	2	24.8		43	18	6	30	34		0.30	10.3	5	4	11	16	nw.	Geo. C. Robinson.	
Plymouth.	Sheboygan.	843	1	19.9		40	27	0	9	28		0.16	5.9	4	10	8	13	n.	Paul O. Feldrappe.	
Port Washington.	Ozaukee.	713	17	22.9	-0.8	38	27	2	9	22	-0.61	0.30	11.5	7	11	5	15	nw.	Richard C. Kann.	
Racine.	Racine.	633	13	23.5	-1.9	41	27	2	9	25	-1.21	0.08		4	14	2	15	nw.	Daniel Davis.	
Ripon.	Fond du Lac.	935	1	19.1		38	14	-2	31	36		0.37	11.0	5	15	6	10	nw.	Ripon College.	
Sheboygan.	Sheboygan.	831	12	23.0	-2.6	38	14	-2	9	24	-0.67	0.30	11.0	7	18	3	10	nw.	Louis C. Meyer.	
Sturgeon Bay.	Door.	600	12	21.6	-2.8	41	17	-1	16	29		0.16	14.0	8	6	12	13	n.	Adam N. Dier.	
Superior.	Douglas.	671	1	13.6		36	14	-13	30	43		0.16	5.2	9	10	9	12	sw.	Edward B. Banks.	
Waupaca.	Waupaca.	857	14	17.2	-2.3	40	14	-13	9	38	-0.48	0.36	15.2	7	11	10	10	sw.	James H. Flagg.	
Illinois.																				
Chicago.	Cook.	824	40	26.4	-2.9	43	27	7	12	20	-0.75	0.71	9.2	11	8	8	15	w.	U. S. Weather Bureau.	
Indiana.																				
Auburn.	De Kalb.	874	14	19.8	-6.2	36	27	-2	9	33	+0.02	0.45		10	4	0	27	w.	Mrs. Josie B. Kuhlman.	
Berne.	Adams.		0	25.1 <sup>d</sup>		45 <sup>a</sup>	28 <sup>d</sup>	1	25	30 <sup>a</sup>		1.03	12.1	10	9	10	12	sw.	H. M. Reusser.	
Elkhart.	Elkhart.	901	8	25.0		41	28	7	9	24		0.72		9	6	15	10	nw.	Dr. Miles Medical Co.	
Fort Wayne.	Allen.	775	14	25.1	-2.2	48	23	2	9	32	-0.67	0.89	6.7	9	6	6	19	nw.	Orion E. Mohler.	
Hammond.	Lake.	598	19	25.5	-1.4	41	27	2	11	27	-0.69	0.86	6.0	5	5	4	22	.....	Carson W. Whitney.	
Howe.	Lagrange.	886	5	23.2 <sup>b</sup>		40 <sup>b</sup>	27	1	13	32	1.05 <sup>i</sup>	0.40 <sup>i</sup>	8.0	5 <sup>i</sup>	11 <sup>i</sup>	0 <sup>i</sup>	11 <sup>i</sup>	w.	James E. Zook.	
South Bend.	St. Joseph.	726	17	23.1	-4.1	38	31 <sup>d</sup>	1	13	31	-0.39	0.75	22.5	13	4	2	25	s.	Henry H. Swaim.	
Whiting.	Lake.	606	0	26.0		42	15	2	12	24		0.62	6.5	4	16	2	13	sw.	D. H. Boyd.	
Michigan—Upper Peninsula.																				
Baraga.	Baraga.	623	8	23.0		45	1	11	8	32	1.50		0.60	15.0	7	5	2	22	w.	D. S. S. & A. Ry.
Bertrand.	Ontonagon.	1,300		15.5		40 <sup>a</sup>	15	-6	25	30 <sup>a</sup>	1.27		0.50	21.0	9	4	6	21	sw.	Frank McMonigal.
Blaney.	Schoolcraft.		3	20.7		36	17	-2	30	25	1.90		0.80	19.0	12	12	9	10	nw.	Dr. S. S. Hackwell.
Calumet.	Houghton.	1,246	22	18.0	-3.2	35	14	-6	30	31	-0.24	0.44	33.0	19	3	4	24	n.	E. S. Grieron.	
Chatham.	Alger.	875	9	19.6		37	17	-4	9	36		0.23	22.5	20	5	6	20	nw.	U. P. Experiment Station.	
Deer Park.	Luce.	610	9																Mrs. Sara E. McGaw.	
Detour.	Chippewa.	585	9	21.2		46	18 <sup>d</sup>	-15	31	50	1.48		0.60	18.5	5	17	0	14	n.	Dr. F. E. Cameron.
Eagle Harbor.	Keweenaw.	622	11	22.6	-0.8	38	14	-1	30	31	0.88	-2.16	0.20	8.8	11	3	4	24	nw.	John Nolen.
Escanaba.	Delta.	612	37	20.8	-0.8	36	14	-3	30	29	-0.36	0.52	13.5	13	5	6	20	nw.	U. S. Weather Bureau.	
Ewen.	Ontonagon.	1,147	9	15.7		33	23 <sup>d</sup>	-20	25	44	3.55		0.60	35.5	17	11	0	20	w.	W. B. Hatfield.
Grand Marais.	Alger.	610	9																Mrs. Lena Truedell.	
Houghton.	Houghton.	668	9	20.0	-1.5	36	14	-9	25	31	-0.53	0.32	23.8	20	2	6	23	nw.	U. S. Weather Bureau.	
Humboldt.	Marquette.	1,536	13	15.6	+0.5	37	15	-29	25	60	1.00	0.00	0.60	10.0	4	2	7	22	w.	D. S. S. & A. Ry.
Iron Mountain.	Dickinson.	1,111	9	18.8		45	15	-10	25	37 <sup>b</sup>	0.52		0.36	5.0	0	0	6	25	nw.	Chapin Mining Co.
Iron River.	Iron.	1,504	13	13.2	-2.5	36	4	-17	25	37	2.20	-0.99	0.70	20.0	11	6	21	4	nw.	Victor D. Laing.
Ironwood.	Gogebic.	1,520	7	15.8		36	14	-5	30	30	1.01		0.30	22.0	8	8	3	20	w.	Prof. J. V. Brennan.
Ishpeming.	Marquette.	1,536	10	16.0 <sup>i</sup>	-1.1	35 <sup>i</sup>	14	-9 <sup>i</sup>	27	38 <sup>i</sup>	0.88	-1.12	0.30	8.8	16	4	11	16	w.	Cliv'd Cliffs Iron Co.
Isle Royale.	Keweenaw.	610	3																John H. Malone.	
Mackinac Island.	Mackinac.	831	10	17.8	-5.6	31	1	-4	29	28	0.52	-1.63	0.26	5.2	4	4	9	18	n.	M. I. S. P. Com.
Maple Ridge.	Delta.		4	18.0		34	17	-8	30	29	1.20		0.60	12.0	3	9	3	19	nw.	Hermon Johnson.
Marquette.	Marquette.	734	39	21.0	-1.9	35	27	0	30	23	3.67	+1.15	0.76	43.0	25	1	11	19	sw.	U. S. Weather Bureau.
Menominee.	Menominee.	581	11	20.7 <sup>b</sup>	-2.5	39	14	-1	30	26 <sup>b</sup>	1.25	+0.44	0.40	12.5	9	12	7	12	nw.	C. & N. W. Ry.
Newberry.	Luce.	773	8																John Brown.	
Powers.	Menominee.	868	11																C. & N. W. Ry.	
St. Ignace.	Mackinac.	593	20	21.6	-2.7	38	14	-1	25	33	1.19	-0.85	0.30	8.9	5	8	13	10	w.	D. S. S. & A. Ry.
Sault Ste. Marie.	Chippewa.	614	22	15.5	-5.0	36	14	-13	30	37	1.33	-1.00	0.44	14.6	15	3	4	24	e.	U. S. Weather Bureau.
Thomaston.	Gogebic.	1,347	13	15.2	+0.8	36	14	-8	32	2.84	+0.57	0.50	28.0	14	3	6	22	nw.	D. S. S. & A. Ry.	
Victoria.	Ontonagon.	1,263		14.1		37	14	-11	30	38	2.48		0.30	37.5	20	6	6	19	nw.	R. S. Schults, Jr.
Watersmeet.	Gogebic.		1	14.8		34	14	-18	25	35	0.92		0.20	9.2</						



TABLE 1.—Climatological data for December, 1910. District No. 4, Lake Region—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	
Michigan—Lower Peninsula—Continued.																				
Concord.	Jackson	685	5	22.2		39	27	0	16	28	2.25		0.94		6	14	14	3	Dr. W. N. Armstrong.	
Croton.	Newaygo	685	2	25.7		41	30	5	16	30	1.13		0.30	10.5	9	2	13	16	G. R. Mus. Power Co.	
Detroit.	Wayne	730	39	23.2	—6.3	38	18	7	16	25	2.05	—0.34	0.45	20.1	17	3	12	16	U. S. Weather Bureau.	
Durand.	Shiawassee	799	3																H. J. Tobin.	
East Tawas.	Iosco	590	13	22.2	—2.5	40	14	—	31	31	0.86	—0.60	0.24	16.0	7	17	10	4	Detroit & Mackinac Ry.	
Eloise.	Wayne	640	13	22.6	—3.9	40	18	0	9	31	2.20	—0.39	0.52	17.1	13	8	6	27	John Gilmore.	
Flint.	Genesee	730	21	21.2	—5.4	37	27	—	9	31	42	1.15	—0.64	0.40	11.5	9	2	11	Wm. L. Fisher.	
Frankfort.	Benzie	589	6	26.2		38	31	10	31	28	1.95		0.20	19.5	17	0	0	31	Capt. Geo. Morency.	
Ganges.	Allegan	665	1	25.2		39	27	10	22	23	1.44		0.40	16.0	6	5	5	21	H. H. Hutchins.	
Gaylord.	Ontonagon	1,367	5	18.0		34	4	—	2	9	17				16	0	15	—	Michigan Central R. R.	
Gladwin.	Gladwin	794	14	30.4	—4.6	40	14	—	9	33	0.45	—1.07	0.20	7.0	3	20	9	2	Geo. R. Smith.	
Grand Haven.	Ottawa	628	29	25.9	—4.2	40	14	12	22	22	1.62	—0.89	0.32	21.1	20	4	5	22	U. S. Weather Bureau.	
Grand Rapids.	Kent	707	21	25.1	—3.7	38	27	14	9	21	1.37	—1.17	0.51	18.4	12	3	7	21	Do.	
Grape.	Monroe	625	20					0	16		1.06	—0.92	0.32	15.4	13	6	11	14	Joseph W. Morris.	
Grass Lake.	Jackson	869	4	30.2		36	14	—	6	25	28	2.06	—	0.55	16.0	8	9	1	Memo Conklin.	
Grayling.	Crawford	1,147	21	16.4	—6.5	36	16	—	12	25	37	1.80	—0.76	0.40	15.0	8	13	16	S. N. Insley.	
Harbor Beach.	Huron	635	22	23.1	—4.1	38	14	—	6	31	36	1.86	+0.14		28.0	15	0	1	Pere Marquette R. R.	
Harrison.	Clare	1,159	17																Do.	
Harrisville.	Alcona	616	26	20.4	—4.1	39	14	—	8	31	41	2.24	—0.41	0.40	22.5	14	1	11	Dr. D. W. Mitchell.	
Hart.	Oceana	608	18																Pere Marquette R. R.	
Hayes.	Huron	620	20																Theo. Leipprandt.	
Highland.	Oakland	830	18																A. D. De Garmo.	
Hilledale.	Hilledale	1,150	13	22.8	—2.5	45	29	0	9	38	1.64	—0.92	0.60	13.5	15	7	5	19	Prof. C. L. Herron.	
Holland.	Ottawa	610	4	24.2		42	27	0	13	32	1.57		0.25	15.5	14	2	1	18	City of Holland.	
Howell.	Livingston	924	18	19.2	—7.4	37	18	—	1	28	2.4	—0.25	1.00	9.4	8	5	16	9	Frank Sharp.	
Ivan.	Kalamazoo	21	19.4	—4.5	36	14	—	7	9	32	1.25	—1.09	0.26	20.0	11	2	16	13	O. L. Giddings.	
Jackson.	Jackson	927	13	22.6	—3.9	40	27	1	9	29	1.40	—0.53	0.65	10.0	11	7	9	15	City of Jackson.	
Jeddo.	St. Clair	667	21	21.3	—5.5	36	27	—	6	31	35	2.80	+0.62	0.60	28.0	14	7	8	16	William Bice.
Kalamazoo.	Kalamazoo	955	34	24.8	—3.0	42	9	5	24	30	2.59	—0.20	0.43	39.5	15	5	9	17	Kalamazoo Asylum.	
Lansing (Agr. College).	Ingham	820	46	21.6	—4.5	38	27	—	2	16	30	1.28	—0.71	0.36	19.8	14	4	7	20	U. S. Weather Bureau.
Lansing (Capitol).	do.	881	23																State Board of Health.	
Lapeer.	Lapeer	827	11	22.1	—3.4	39	27	—	1	31	35	1.45	+0.09	0.50	15.5	7	2	5	25	Michigan Home.
Ludington.	Mason	586	12	26.0	—0.9	38	14	—	9	15	27	0.54	—1.61	0.24	12.0	6	1	18	8	Pere Marquette R. R.
Luther.	Lake	1,028	0	21.4		38	31	—	3	25	36	0.88		0.19	15.2	15	4	5	22	John W. Nicholson.
Mackinaw.	Cheboygan	592	14	20.2	—3.3	40	18	—	1	31	35	1.78	—0.18	0.48	22.0	8	3	4	24	Grand Rapids & Ind. R. R.
Mancelona.	Antrim	1,121	14	19.2	—3.2	33	14	—	1	6	30	2.60	—0.09	0.60	20.0	8	0	11	20	Do.
Manistee.	Manistee	600	13	24.8	—2.8	39	14	8	31	30	0.80	—1.63	0.40	8.0	3	0	5	26	Pere Marquette R. R.	
Midland.	Midland	604	11	22.7	—3.5	42	1	4	25	28	1.95	+0.59	0.50	19.5	7	2	0	29	Do.	
Montague.	Muskegon	600	7																Gerard A. Whitback.	
Morenci.	Lenawee	811	3	23.0		39	18	—	1	13	28	1.34		0.65	11.0	8	7	9	15	George J. Tripp.
Mount Clemens.	Macomb	615	10			45	30				2.89	+0.98	0.60		12	4	5	22	Water Works.	
Mount Pleasant.	Isabella	826	11	20.9	—3.9	39	27	2	10	35	0.75	—0.85	0.30	7.5	5	23	0	8	Pere Marquette R. R.	
Muskegon.	Muskegon	587	14	25.4		38	18	9	22	24	2.10		0.60	21.0	10	6	4	21	Grand Rapids & Ind. R. R.	
Old Mission.	Grand Traverse	858	16	23.0	—3.6	37	17	7	30	29	1.28	—0.43	0.17	10.1	15	0	11	20	E. O. Ladd.	
Olivet.	Eaton	934	20	21.8	—5.1	36	27	3	25	25	1.85	—0.70	0.70	18.2	12	12	1	18	Prof. G. A. Knapp.	
Omer.	Arenac	616	11	21.2	—2.4	38	18	2	16	27	0.75	—0.53	0.30	7.5	5	2	11	18	Detroit & Mackinac R. R.	
Onaway.	Presque Isle	826	7												0	1	30	—	Do.	
Ovid.	Clinton	760	20																Dr. B. L. Bates.	
Owosso.	Shiawassee	731	13	23.3	—3.0	42	14	0	9	34	2.40	+0.93		24.0	13	2	10	15	Owosso Sugar Co.	
Petoskey.	Emmet	600	20																Grand Rapids & Ind. R. R.	
Plymouth.	Wayne	725	13	22.0	—6.7	44	15	0	9	35	1.45	—0.35	0.50	14.5	7	21	0	9	Pere Marquette R. R.	
Pontiac.	Oakland	935	10	22.3	—7.7	40	27	2	30	28	2.14	—0.35	0.70	17.5	8	10	4	17	Fred W. Shaw.	
Port Austin.	Huron	618	14																Pere Marquette R. R.	
Port Huron.	St. Clair	639	35	21.7	—5.6	38	14	3	30	28	2.41	+0.24	0.55	28.2	13	5	7	19	U. S. Weather Bureau.	
Reed City.	Oscoda	1,033	14	22.0	—1.6	36	14	0	10	30	0.82	—0.64	0.30	7.0	7	0	0	31	Pere Marquette R. R.	
Roscommon.	Roscommon	1,141	6	18.1		38	14	—	12	25	42				2	16	12	—	State Forestry Com.	
Saginaw.	Saginaw	601	8	23.0	—3.2	40	27	3	31	32	2.15	—0.03	0.35	21.5	13	7	8	16	Postmaster.	
Saginaw, W. S.	do.	601	15	22.7	—3.8	40	27	1	25	31	1.42	—0.63	0.31	16.8	14	6	7	18	Robert B. Hudson.	
St. James.	Charlevoix	681	4	22.8		36	14	3	31	33	2.33		0.70	13.0	9	0	0	31	Rev. N. Wilhelm.	
St. Joseph.	Berrien	593	23	27.0	—4.2	38	15	5	23	30	2.55	—0.40	0.75	19.0	8	6	5	20	City of St. Joseph.	
Sandusky.	Sanilac	790	1	21.4		38	28	2	9	29	1.09		0.25	17.0	8	4	8	19	Pere Marquette R. R.	
Saranac.	Ionia	639	15	23.0	—4.5	40	27	3	16	31	1.22	—1.59		14.6	8	8	1	22	John Wallington.	
South Haven.	Van Buren	585	14			38	1				2.11	—0.98	0.30	30.5	16	4	14	13	Mrs. M. E. De Diemar.	
Stanton.	Montcalm	880	17																City of Stanton.	
Thornville.	Lapeer	975	33	23.9	—4.3	45	23	—	5	31	42	3.40	+1.04	0.90	29.5	13	1	4	26	Dr. J. S. Caulkins.
Traverse City.	Grand Traverse	588	13																Grand Rapids & Ind. R. R.	
Vassar.	Tuscola	641	9	21.6		38	27	—	7	25	40	1.25			12.5	9	0	16	15	Pere Marquette R. R.
Waseca.	St. Joseph	842	13	23.4	—2.5	40	27	—	2	13	30	2.96	+0.08	1.05	15.0	10	6	0	25	Chas. A. Palmer.
Webberville.	Ingham	884	8	21.6		39	27	—	7	9	28	2.25		0.60	22.5	13	4			



TABLE 1.—Climatological data for December, 1910. District No. 4, Lake Region—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, of inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing direction of wind.
Ohio—Continued.																				
Sandusky.....	Erie.....	629	33	25.2	-5.9	46	28	9	16	25	1.72	-0.63	0.66	7.9	15	5	7	10	sw.	U. S. Weather Bureau.
Tiffin.....	Seneca.....	775	28	25.4	-5.7	46	28	7	16	22	2.57	-0.06	0.91	11.8	12	6	8	17	w.	Prof. T. H. Sonnedecker.
Toledo (1).....	Lucas.....	769	39	25.1	-5.4	40	28	11	16	22	1.71	-0.59	0.62	9.1	12	7	9	15	sw.	U. S. Weather Bureau.
Toledo (2).....	do.....	606	6	24.4		41	18	9	16	23	1.67		0.60	6.5	14	6	8	17	n.	J. A. Krance, S. J.
Upper Sandusky.....	Wyandot.....	854	27	24.4	-6.7	48	28	5	9	29	2.81	+0.16	0.70	10.7	12	4	10	17	sw.	Robert E. Tracht.
Vickery.....	Sandusky.....	588	17	23.9	-6.0	46	28	1	13†	30	1.99	-0.45	0.73	11.0	15	8	4	19	w.	John W. Barr.
Wauseon.....	Fulton.....	780	38	22.8	-4.9	40	18	1	25	27	1.80	-0.85	0.71	12.2	16	4	11	16	sw.	Thomas Mikesell.
Wellington.....	Lorain.....	856	16	25.0	-5.6	48	28	0	22	32	2.06	-0.33	0.54	11.5	14	8	2	21	sw.	W. D. Warren.
Willoughby.....	Lake.....	649	16								1.99	-0.55	0.55		8	2	6	23	w.	C. J. Richardson.
Pennsylvania.																				
Erie.....	Erie.....	658	38	26.0	-5.7	47	28	10	31	24	2.89	-0.06	0.63	24.0	20	2	6	23	s.	U. S. Weather Bureau.
New York.																				
Adams Center.....	Jefferson.....	540	19	18.9	-4.9	40	23†	-17	31	55	5.90	+1.93	1.80	59.0	16	8	7	16	n.	A. E. Cooley.
Angelica.....	Allegany.....	1,340	27	19.5	-6.3	41	28†	-11	31	40	2.09	-0.57	0.65	25.0	16	1	7	23	w.	Charles P. Arnold.
Appleton.....	Niagara.....	270	19	24.2	-5.5	43	24	-5	31	32	1.75	-0.70	0.31	15.0	11	0	7	24	sw.	H. A. Van Wagoner.
Auburn.....	Cayuga.....	715	41	21.2	-7.8	41	28	-4	31	32	2.12	-0.64	0.92	22.0	10	15	10	6	s.	A. H. Underwood.
Avon.....	Livingston.....	585	15	21.2	-6.1	40	28	-4	17†	32	0.83	-1.02	0.30	11.0	7	1	10	20		W. G. Markham.
Blue Mountain Lake.....	Hamilton.....	1,750	10								2.17	-1.77	0.70	18.0	7	13	8	10	w.	B. F. Merwin.
Brockport.....	Monroe.....	537	14	22.0	-5.2	39	23	-5	31	27	2.03	-0.13	0.87	29.5	16	2	10	19	w.	W. H. Lennon.
Buffalo.....	Erie.....	767	59	23.4	-6.7	40	23	3	31	29	2.98	-0.39	0.59	25.4	23	3	9	19	w.	U. S. Weather Bureau.
Canton.....	St. Lawrence.....	448	16	12.2	-10.5	39	23	-30	31	54	3.49	-0.10	0.81	25.0	19	4	11	16	sw.	Do.
Cape Vincent.....	Jefferson.....	246	5	18.2		36	15†	-18	31	39	1.93		0.60		10	10	11	10	e.	Verne M. Rice.
Carvers Falls.....	Washington.....	243	12	16.1	-6.2	42	19	-22	22	39	1.18	-1.55	0.71	10.0	3	14	10	7	n.	Washburn Fancher, C. E.
Chazy.....	Clinton.....	151	10	13.8	-6.1	38	20	-17	30	33	0.95	-0.58	0.40	9.5	4	13	4	14	n.	W. R. North.
Danemora.....	do.....	1,490	5	13.2		37	24	-18	31	38	4.14		0.78	29.2	12	12	2	17	w.	Dr. W. N. Thayer.
Elba.....	Genesee.....	530	9	19.6	-6.4	45	29	-11	31	35	5.30	+2.02	0.60	52.0	13	9	9	13	sw.	Jos. S. Wilford.
Fayetteville.....	Onondaga.....	500	11	19.9		45	29	-11	31	33	1.64	-1.09	0.34	15.2	10	8	12	11	nw.	Dana H. Wells.
Gabriels.....	Franklin.....	1,729	8	12.4		34	29†	-37	31	42	2.22		0.30	19.7	20	8	6	17	nw.	Sanatorium.
Harkness.....	Clinton.....	622	8	15.1		38	19	-17	31	37	1.01		0.23	9.5	8	23	3	5	w.	J. W. Harkness.
Hemlock Lake.....	Livingston.....	900	12	21.6	-6.4	41	28†	-5	31	31	1.66	-0.28	1.10	15.0	5	5	9	17	nw.	D. H. Westbury.
Hunt.....	do.....	1,321	11	22.4	-4.3	42	18†	-9	31	41	2.70	-0.08	1.10	9.0	5	2	13	16	nw.	W. S. Barrager.
Ithaca.....	Tompkins.....	928	32	21.2	-7.2	44	29	-1	16	27	2.18	-0.46	0.78	11.6	17	2	6	23	nw.	U. S. Weather Bureau.
Keene Valley.....	Essex.....	1,000	12	15.7	-4.0	44	27	-17	11	46	2.43	-0.47	0.94	12.8	13	13	6	12	w.	E. R. Wells.
King Ferry.....	Cayuga.....	350	18	19.2	-5.0	41	24	-8	17	36	1.54	-2.12	0.83	5.2	7	8	9	14	n.	Lucius A. Goodyear.
Lake George.....	Warren.....	1,864	2	9.8		33	29	-18	10	47	4.44		0.65	36.2	19	7	13	11	nw.	Charles Fossell.
Lake Placid Club.....	Essex.....	920	20	20.6	-7.0	39	27	-4	31	31	2.67	-0.34	0.45	23.8	17	2	5	24	nw.	Henry Van Hoevenberg.
La Roy.....	Genesee.....	650	23	22.2	-7.7	40	23	-2	31	28	3.01	+0.50	0.60	23.5	18	5	1	25	nw.	F. W. Ball.
Lockport.....	Niagara.....	900	43	13.3	-9.5	38	29	-21	10	44	2.76	+0.41	0.85		7	15	6	10	n.	J. E. Wakeman.
Lowville.....	Lewis.....	200	10	12.3	-6.8	37	24	-22	31	36	4.06	+0.93	0.70	33.0	16	5	13	13	w.	Charles J. Rice.
Maria.....	Franklin.....	1,750	2	10.6		35	30	-28	10	43	5.04		1.02	55.2	21	13	6	12	sw.	C. E. McBride.
Nehasane.....	Hamilton.....	1,822	9																sw.	Dr. L. W. Brown.
North Lake.....	Herkimer.....	175	26	15.2	-6.7	36	19	-14	31	41	2.76	+0.32	0.60	22.5	13	6	20	5	sw.	H. A. Paull.
Ogdensburg.....	St. Lawrence.....	1,733	2	12.8		42	30	-22	31	48	4.51		1.56	42.8	21	10	6	15	w.	State Hospital.
Old Forge.....	Herkimer.....	335	40	21.5	-7.7	40	28	-6	31	31	2.05	-1.54	0.41	25.3	18	2	3	26	s.	Dr. S. W. Nelson.
Oswego.....	Oswego.....	1,410	6	20.1*		41*	24†	-4*	5	34*	1.67		0.40		11	15	1	15		U. S. Weather Bureau.
Otto.....	Cattaraugus.....	460	51								4.02	+0.31	0.80	33.4	19	9	10	12	sw.	William Wink.
Palmer.....	Oswego.....	1,038	30	20.4	-5.2	43	30	-14	17	48	2.76	0.00	1.04	10.9	17	4	2	25	nw.	E. B. Bartlett.
Perry City.....	Schuyler.....	485	4	14.4		38	24	-24	31	37	2.52		0.47	25.5	14	5	16	10	w.	W. H. Jeffers.
Philadelphia.....	Jefferson.....	170	60																sw.	E. D. Babcock.
Plattsburg.....	Clinton.....	300	34	14.6	-7.6	41	24	-27	31	55	2.99	+1.00	0.56		10	18	0	13	w.	T. P. Davison.
Potsdam.....	St. Lawrence.....	523	81	22.4	-6.5	39	28	0	31	28	3.15	+0.27	0.83	29.8	20	3	5	23	w.	A. E. Sutherland.
Raquette Lake.....	Hamilton.....	719	18	22.7	-6.3	40	14†	0	31	29	1.80	-0.42	0.44	15.7	8	3	11	17	s.	R. J. Dunning.
Rochester.....	Monroe.....	740	11	20.8	-6.5	40	29	-6	6	28	1.50	-0.46	0.50	14.3	5	4	8	19	sw.	U. S. Weather Bureau.
Romulus.....	Seneca.....	597	8	20.6	-7.7	42	28	-4	31	35	2.24	-0.41	0.50	22.7	17	3	4	24	sw.	John B. Coryell.
Shortsville.....	Ontario.....	344	12	18.6	-5.9	40	30	-17	22	40	0.77	-1.81	0.40	10.5	4	13	6	12	n.	C. H. Latting.
Skaneateles.....	Onondaga.....	1,620	17																sw.	Edward Conron.
Syracuse.....	do.....	1,522	10	12.4		36	29†	-26	31	45	2.88	+0.36	0.70	31.5	13	11	5	15	w.	U. S. Weather Bureau.
Ticonderoga.....	Franklin.....	1,167	11	21.0	-5.5	40	28	0	31	29	4.60	+1.31	1.00	36.0	14	2	7	22	sw.	Rev. Aaron W. Maddox.
Trudeau.....	Chautauqua.....	737	18	17.0	-6.6	37	24	-16	31	35	3.53	+0.08	0.48	32.5	16	10	3	18	sw.	Benjamin Breads.
Tupper Lake.....	St. Lawrence.....	1,430	21	19.4	-6.7	41	30	-4	17	33	1.66	-1.08	0.40	18.0	11	10	8	13	sw.	J. Otto Haukele.
Volusia.....	Jefferson.....	837	14	22.8*	-6.0	43*	28	2*	31	39*	3.79	+1.04	0.49	17.5	16				nw.	H. P. Dunlap.
Wanakena.....	Schuyler.....		8								2.09		0.80	17.5	13	1	27	3	n.	Orlando F. Corwin.
Watertown.....	Chautauqua.....																		n.	John R. Rogers.
Wedgewood.....	Niagara.....																		n.	B. V. Brookins.
Westfield.....																			n.	U. S. Weather Bureau.
Youngstown.....																			n.	C. H. Lane.
Vermont.																				
Burlington.....	Chittendon.....	404	3	15.8	-6.7	39	19	-13	31	40	2.46	+0.77	0.94	18.0	16	1	7	23	s.	U. S. Weather Bureau.
Cornwall.....	Addison.....	507	17	16.6	-8.8	41	30	-11	17	32	2.27	+0.01	0.75	21.0	7	8	11	12	n.	C. H. Lane.
Enosburg Falls.....	Franklin.....	691	19	12.9	-9.4	39	19†	-24	31	44	2.70	-0.27	0.87	21.5	13	9	4	18	nw.	L. Howe Pomeroy.
Northfield.....	Washington.....	876	24	12.4	-8.1	45	30	-19	11	51	1.70	-1.01	0.75	11.2	13	7	6	18	n.	U. S. Weather Bureau.
Wells.....	Rutland.....	750	19	15.6	-8.2	40	30	-10	16	28	3.33	+0.99	1.41	15.6	8	5	14	12	nw.	E. R. Pember.

- \* b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.  
 † Precipitation included in that of the next measurement.  
 ‡ Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.<



TABLE 2.—Daily precipitation for December, 1910. District No. 4, Lake Region.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Minnesota.																																		
Duluth.	Lakes.		.05	.12	.08	.04	.03			.01	.01					.02		T.	T.			T.	T.			.18			.02			0.56		
Floodwood.	do.			.50																							.32						0.82	
Mount Iron.	do.				.30	.04	.01																									0.45		
Stephens Mine.	do.				.21	.10	.09				T.			T.												.15	T.			T.	.02		0.54	
Two Harbors.	do.				.20						T.															.16				T.	T.		0.53	
Virginia.	do.		T.	.26			.05				.04								T.							.26	T.						0.61	
Wisconsin.																																		
Appleton.	Fox.		T.		.03	.05	T.	T.	.06			.20							.01				.07	T.	T.	.38	T.			.01			0.81	
Ashland.	Lake.			.14	T.	.07		.06				T.										.15	.13		.27							T.	0.82	
Bayfield.	do.													.60	.40																		2.40	
Cecil.	Fox.		T.		.03	T.		.08				.18										.05				.25	.03						0.60	
Florence.	Menominee.		T.	T.			T.	T.	T.			.30											.50										0.73	
Fou du Lac.	Fox.			.08	.07	T.	T.	.06				.12							.03				.03	T.	T.	.13				.02			0.73	
Grand River Locks.	do.		T.	.10	.03	T.		T.			.12									T.	T.		.03	T.		.05	T.			.03			0.73	
Green Bay.	Lake.		T.	.07	.02	T.	T.	.02				.09							.01	T.			.09	.01		.41				.03			0.73	
Iron River.	do.																								.20								0.40	
Kewaunee.	do.			.17				.11			.32												.32			.62				.05			1.06	
Manitowoc.	do.		T.		.35		.02				.21											.02			.31				.02				0.87	
Menasha.	Fox.			.05	.14	.05	T.	.16			.21											.23		T.	.32					T.			1.16	
Menomonee Falls.	Lake.		T.	.10	.10	T.		.08			.18								.30	T.		.07	.12		.11				.07	T.			1.13	
Milwaukee.	do.		T.	T.	.03	.08	T.	T.	.01		.15								.01	.01		.04	T.	T.	.09				.02	.02			0.82	
New London.	Fox.			.06	.04			.14			.24											.09	T.			.25							0.87	
Oconto.	Lake.			.20				.05			.45															.50	.10			.10			1.60	
Oshkosh.	Fox.		T.	T.	T.		.10			.14																							0.72	
Pine River.	do.		.01	T.	.07	.05	T.	T.	.07		.20																						0.63	
Plum Island.	Lake.										.03																						1.03	
Plymouth.	do.				.10			.01			.09	T.																					0.36	
Port Washington.	do.				.10			.10			.30																						1.15	
Racine.	do.		T.		.08	T.	T.	T.			.08								.05	T.													0.26	
Ripon.	Fox.			.03	.20			.15			.35																						1.10	
Sheboygan.	Lake.		T.		.10	T.		.10			.15																						1.10	
Sturgeon Bay.	do.		T.	.16	.02			.04			.10	T.																					0.57	
Superior II.	do.			.16	.04	.03		.04			.10																						0.52	
Waupaca.	Fox.		.01		.05			.08			.22																						0.80	
Illinois.																																		
Chicago.	Lake.		T.	T.	.08	T.	.01	T.	.01		.05	.23							.08	T.	T.		.03	.01	T.	.03			T.	.71	.08		1.32	
Indiana.																																		
Auburn.	Maumee.		.09	T.		T.			T.			.27	.39	T.								.16	.09			.21			.45	.29	.13		2.15	
Berne.	do.		.02		.10	.02					.14											.03	.01	.03									2.11	
Elkhart.	St. Joseph.			.09	.08			.05			.29		.15																				2.25	
Fort Wayne.	Maumee.		.07	.01	T.	.09		T.			.18																						1.78	
Hammond.	Lake Michigan.		T.							.23												.20											1.51	
Howe.	St. Joseph.									.40																							1.50	
South Bend.	do.		.75	.04	T.	.05		T.			.22		.13	T.																			2.59	
Whiting.	Lake Michigan.				.10						.40	T.							.15														1.27	
Michigan—Upper Peninsula.																																		
Baraga.	Lake.		.60		.10	.10		.20			.20								.10														1.50	
Bertrand.	Ontonagon.		.50	T.	.06	T.	.10		T.	.23		.20	.04	T.					.07														1.27	
Blaney.	Manistique.						.10	.10			.05	.05	.10																				1.90	
Calumet.	Lake.		.04	.06	T.	T.	.12	.24	.34	.06	.06	.04	.44	.12	T.																		2.64	
Chatham.	do.		.06	.07	.12	.04	.07	.06	.03	.07	.08	.13	.16	.04	.05																		2.25	
Deer Park.	do.					.10						.60																					1.48	
Detour.	St. Marys.																																	
Eagle Harbor.	Lake.		.05	T.	.05		.04	T.	.05	.05	T.	T.	.18	T.																			0.88	
Escanaba.	do.		T.	.02	T.	.01	T.	.02			.43	.01	T.		.02	.02																	1.34	
Ewen.	Ontonagon.		.30	T.	.05		.10	.10	.30	.10		.20	.40	.40					.20	T.	.10		.00										3.55	
Grand Marais.	Lake.																																	
Houghton.	do.		.03	.02	.01	T.	.03	.02	.16	.10	.07	.29	.16	.05		.01	.04																1.94	
Humboldt.	Escanaba.					.20																												1.00
Iron Mountain.	Menominee.		T.	T.	.03			T.			.08	T.							.02														0.52	
Iron River.	do.		T.	T.	T.	.20	T.	T.	.10		.30							.30	.10														2.20	
Ironwood.	Lake.		.14								.04		.07																					1.01
Ishpeming.	Escanaba.			.02	.01	T.			.01		.02	.01	.01						.02	.10	.05		.01	.05		.30	.10			.02	.05		0.88	
Isle Royal.	Lake.																																	
Mackinac Island.	do.				.08	T.		.04				.14																						0.52
Maple Ridge.	do.										.40																							1.70
Marquette.	do.		.10	.09	.16	.38	.04	.01	.01	.01		.14	.06	.12		.04	.35	.11		.10	.38	.11	T.	.05	.11	.24	.23	.04	T.	T.	.34	.44	.01	1.25
Menominee.	Menominee.		T.		.20	T.		.10			.15	T.							.05															
Newberry.	Tequamenon.																		.02	.03		.01	.23	.08										
Powers.	Lake.																																	



TABLE 2.—Daily precipitation for December, 1910. District No. 4, Lake Region—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Michigan—Lower Peninsula—Continued.																																		
Eloise.	Rouge.	T.		T.	.04			.11	.02		.52	.04	T.		T.			T.	.11	.08			.30	.01		.11		.44	.35	.01		2.20		
Flint.	Saginaw.			T.				.06			.09	.07	.05						.18				.08			.08		.40	.14			1.15		
Frankfort.	Beaumont.					.10				.05	.20	.10	.20	.10		.20	.10		.10	.10			.10	.10	.10	.10				.10		1.95		
Ganges.	Lake.		T.	T.	T.			.05			.40	T.	.20			T.	T.		.21	.23				.04	.10							1.44		
Gaylord.	Cheboygan.	.10	.03			.02		.08	T.										.07								.20						0.45	
Gladwin.	Saginaw.										.15								.10								.20						1.02	
Grand Haven.	Grand.	T.	.03	.09	T.	T.	.01	.13	.01	T.	.12	.04	.02		.01	T.		.15	.19	.12	.02	.04	.06	.01	.30	.02		.23	.04	T.		1.37		
Grand Rapids.	do.	T.	.01	.12		T.	T.	.51	.02		.13	.05	T.		T.	T.		.06	.05	T.	T.	T.	.01	.01	.10	T.		.24	T.	T.		1.06		
Grape.	Raisin.	.08	T.	.02	.07	.02		.06	T.		.09	.10			T.			T.	.05	T.			.10			.02		.32	.10	.03		2.06		
Grass Lake.	Grand.	.20		T.	.20			T.	T.		.20	.15	T.						.20	.20			T.		.46	T.	T.	.55	.10			1.50		
Grayling.	Au Sable.					.20	.40		T.		.10	.30			T.			T.	T.		.10	T.				.10		.10				1.80		
Harbor Beach.	Lake.							.13			.07	.13	.07		.20	.13	.07		.20	.20	.20	.13				.13		.07	.06	.07		2.24		
Harrison.	Saginaw.										.20	.10	T.			.40	T.						.05	.30			.30		T.	.05			3.31	
Harrisville.	Lake.			T.	.10	.05	.02	.05	.30	.02	.20	.10	T.																			1.64		
Hart.	Pentwater.																															1.67		
Hayes.	Pigeon.																															1.48		
Highland.	Huron.	T.	T.	T.	T.	T.	T.	T.	T.		.60	.08		T.	T.	T.			.14	.12	T.	T.	T.		.70		.08	.44	T.	.85	.10	.20	T.	3.31
Hillsdale.	St. Joseph.			.05				.04	.03		.10	.03	.02						.05	.05			T.		.30	.05	.10	.05		.60	.15	.02	1.64	
Holland.	Lake.	.05	T.	.05				.20	T.	T.	.15	.10	T.						.10	.15	.25	.10		.02	.05	.10	T.		.20	.06		1.57		
Howell.	Saginaw.							.01			.05	.05							.02	.05				.25			.05		1.00			1.48		
Ivan.	Manistee.			.06	T.			.10	.12		.10	.05			.20				.21	.10			.01	.04					T.	.26		1.25		
Jackson.	Grand.	.03		.02	.03			.01	.01		.13	.04	T.						.65	T.					.08		.01		.48	T.		1.49		
Jeddo.	St. Clair.	.20						.10			.12	.08	.10		.05	.15	.05		.30	.30				.50		.20		.60	.05			2.80		
Kalamazoo.	Kalamazoo.	.20	.07	.15				.17	.07		.25	.03							.07	.40	.30	.03	.07			.43	.15		.43	.07		2.59		
Lansing (Agr'l College).	Grand.			.04				.10	.01		.17	.06							.07	.05	.02		.04	.05	.01	.15			.30	.15		1.28		
Lansing (Capitol).	do.																																	
Lapeer.	Saginaw.	.10		T.				.10			.20	.05							.20					.30			T.		.50	T.	T.		1.45	
Ludington.	Pere Marquette.							.08					.07						.07	.06			.02		T.		.24					0.54		
Luther.	Manistee.	.01		.03				.19	.08		.06	.03	.03						.02	.07	T.	.03		.05	T.		.08	.14		.04	.02	0.88		
Mackinaw.	Lake.			.25		.17		.32	.08	.08	T.	.60	T.		T.	T.			.32				T.	T.	T.	.08	.48					1.78		
Mancelona.	do.			T.	T.			.60	.40		T.	.60	T.		T.				.10	.40	.20	T.	T.	T.	.20	.10			T.	T.	T.	2.60		
Manistee.	Manistee.							.40			T.	.20			T.																	0.80		
Midland.	Saginaw.				T.	T.	T.	.20			.30	.20							.25								.50		.30	.20		1.95		
Montague.	White.																																	
Morenci.	Maumee.			.05				.01			.15								.06					.30			.03		.65	.00	T.	1.34		
Mount Clemens.	Clinton.	T.	T.	.05	.04			.10	.04		.50	.04	.02		T.	.60			T.	T.	T.			.49	T.	T.	.48		.45	.05	T.	2.80		
Mount Pleasant.	Saginaw.							.20			.20	.10	.05						T.	.30	.60	.10					.10	.20				0.75		
Muskegon.	Muskegon.	.10		.10	.10			.40	T.	T.	.10	.10	T.						.04	.15	.15	.05		.07	.06	.17						2.10		
Old Mission.	Lake.	.06						.15	.06	.05	.03	.10			.05				.07	.13	.15	.05		.08	.06	.08		.70	.16			1.28		
Olivet.	Kalamazoo.	T.		.11	.01			.20	T.		.23	.02	T.						.07	.20												1.85		
Omer.	Lake.	T.						.20	T.		.10																					0.75		
Onaway.	Cheboygan.																																	
Ovid.	Grand.																																	
Owosso.	Saginaw.	.10		.10	.10			.20			.30	.20	.10		T.									.20	.10		.20		.30	.30		2.40		
Petoskey.	Lake.			T.	T.			.40	.30	.20	.30	T.							.06	.05	.10			.35				.50	.05			1.45		
Plymouth.	Rouge.			T.	T.			.05			.30	T.								.10				.50	T.		.00		.70	.05		2.14		
Pontiac.	Clinton.	T.		T.	T.			.10			.60	.03	T.																					
Port Austin.	Lake.							.05	T.		.12	.06	.13	.01		.17	T.	T.	T.	.12	T.			.55	T.	T.	.18		.45	.11	T.		2.41	
Port Huron.	St. Clair.	.44						.05	T.		.12	.06	.13	.01		.17	T.	T.	T.	.10	.10											0.82		
Reed City.	Muskegon.			T.	T.			.30	.20		.12	.06	.13	.01		.17	T.	T.	T.	.10	.10								.01					
Roscommon.	Au Sable.																																	
Saginaw.	Saginaw.	T.	T.	.10	.05	.05	T.	.10	T.	T.	.20	.10	.10		.15				T.	.25	T.			.15	T.	T.	.30		.35	.35	T.	2.15		
Saginaw West Side.	do.			.05	.03	T.	T.	.05	T.		.12	.05	.05		.10				T.	.06	.09	T.		.13	T.	.08	.21		.31	.11	T.	1.42		
St. James.	Lake.	T.						.17	.70		.02	.50				.16								.18			.40					2.33		
St. Joseph.	St. Joseph.			.20				T.	T.		.07	.07							T.	.13				.25			.30		.75			2.55		
Sandusky.	Lake.							.20			.07	.07							T.	.13				.25			.30		.22	.08	.07	1.00		
Saranac.	Grand.			.02				.20			.07	.07							T.	.20	.20			.05		.03	.30							



TABLE 2.—Daily precipitation for December, 1910. District No. 4, Lake Region—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Pennsylvania.																																		
Erie.	Lake.	.02	T.	.03	.01	T.		.12	.51	.03	.22	.05	.03	T.		.18	T.		.12	.12	.16	T.		.30	.02	.04	.04		.30	.47	.12		2.80	
New York.																																		
Adams Center.	Lake Ontario.	.40							1.80						.20	.60	.20	.50	.20	.40	.10	T.		.10	.10	.20	.30	.30	.20		.40		5.90	
Angelica.	Genesee.	.17	.03	.01	.04			T.	.02	.09	T.	.25	.02	T.		.14			T.	.11	.03	T.	T.	T.	.18		.04	.21	.10	.65			2.09	
Appleton.	Lake Erie.	T.	T.	T.	T.	T.	.02	.23	T.	T.		.04	.06			.30	T.	T.	T.	T.	.03	T.	T.	T.	.10		.21	.31	.15	.30			1.75	
Auburn.	Oswego.	.20	.19							.06				T.		.92						.09	T.		.03		T.	.12	.04	.20	.27			2.12
Aves.	Genesee.	.02	.10	T.	T.	T.			T.			T.	T.		.18	.10	T.	T.				T.	T.			T.		T.	.30	.07	.06		0.83	
Blue Mountain Lake.	Raquette.	T.	T.	T.	T.	.30	.10	T.	T.						.30						.05			.70		T.		.20	.20	.37			2.17	
Brookport.	Lake Ontario.	.36	.14	T.	.01			T.	.04	.03		.08			.54		.03	T.	.11	.05	.03		T.	.19	T.	.14		.47	.11	.57			2.93	
Buffalo.	Lake Erie.	.10	.11	.02	.09	T.		.31		T.	.05	.05	.02	.03		.26	.03	.06	.01	.36	.05	.04		.20	.04	.01	.10	.45	.55	.06			2.98	
Canton.	St. Lawrence.	.29	.14	T.	.02	T.			.14					.06	.16	.81		.05	.05	.22	.11	.07		.08	.37	T.	.08	.02	.35	.17	.30		3.49	
Cape Vincent.	do.		T.						T.	.08					.02	.31		.05		.30	.00			.60			.04	.27	.23				1.93	
Carvers Falls.	Lake Champlain.																					.71		.07									1.18	
Chazy.	Chazy.	.30													T.	.15		.10															0.95	
Danvers.	do.	.50	.75						.45						.40	.20		.50	.05	.28				T.	T.		.20	T.	.13	.25	.43		4.14	
Elba.	Lake Ontario.	.60	.30	T.	T.			T.			.20	T.	T.	T.	.20	.60		.20	T.	.60	.60	.30		T.	T.		.20	.60	.40	.60			5.20	
Fayetteville.	Oswego.	.22	.06	.12	T.			T.	T.	.06	T.		T.	T.	T.	.12						T.	.12		T.	.16	T.	T.	.34	.12	.32			1.64
Gabriels.	St. Regis.	.12	.12	.05	.02			.10	.02						.20	.30	.04	.06	.06	.15	.05	.09				.05	.15	.07	.11	.28	.18			2.22
Harkness.	Lake Champlain.		.11												.10							.03		.23				.10	.19	.17			1.01	
Hemlock Lake.	Genesee.	.37						T.	T.		T.				.25					T.	T.	T.	T.						.79	.25			1.66	
Hunt.	do.	.30						.40																				.70	.10	.20			2.70	
Ithaca.	Oswego.	.29	.04	T.	.01	T.		T.	.07	.01	T.	.12	.02	T.	.05	.15	T.	T.	.05	T.	.06	T.	T.	.60	.18	T.	.06	.20	.23	.10			2.18	
Keene Valley.	Ansable.	.22	.14	.03	T.			T.	.10			.05	.03	.02		.20	.05	T.	.02	.15	T.	.10			.94	T.	.18	.12	.18				2.43	
King Ferry.	Oswego.	.21	.04					.03				.03	.03	.02		.05					.05				.27		.04	.15	.47				1.41	
Lake George.	Lake Champlain.	.03			T.										.28					.15	.10			.83				.21	.07	.02			1.54	
Lake Placid Club.	Ansable W. Br.	.15	.23	.05	.05			.10	.50					.15	.65		.15	.10	.18	T.	.20	T.		.15	.15	.10	.15	.10	.31	.56	.56	T.		4.44
Le Roy.	Genesee.	.40	.13	.05	.04		T.		.07		.11				.34	.06	.02	T.	.14	.06	.03		T.	.09	T.	.06		.45	.21	.41			2.67	
Lockport.	Lake Ontario.	.20	.24	T.	.60	T.	T.	.02	.18	.02	T.	.10	.03	T.		.19	.01	T.	T.	.03	.01		.11	.20		.07	.48	.12	.40				3.01	
Louville.	Black.	.15	.05					.40							T.					.43				.85			.50	.38					2.76	
Moria.	St. Lawrence.	.35	.20	.10	T.			T.	.10						.30	.70	.30	T.	T.	.10	T.	.30		.47		.20	.10	.40	.30	.14	.10		4.06	
Nehasane.	Beaver.	.11	.11	.02	.02	T.			.50	.03					.22	.42	.03	.11	.13	.40	.07	.05		T.	1.02	.04	.10	.02	.41	.21	.72			5.04
North Lake.	Black.																																	
Ogdensburg.	St. Lawrence.	.12	.04					.04				T.		T.		.24	.55		.02	T.	T.	.31	T.	T.		.50	T.	.10	.02	.12	.10	.60	T.	2.76
Old Forge.	Black.	.05	.08	.04	.04			.13	.08						.10	.50	.08	.14	.08	.45	.05	.11			1.56	.03	.03	.02	.40	.15	.39			4.51
Oswego.	Lake Ontario.	.07	.02	.12	.04	T.		T.	.40	T.	T.	T.	T.	.08		.12	.08	.09	.01	T.	.02	.01		.23	.18	T.	.03	.20	.22	.13	T.			2.05
Otto.	Lake Erie.	.04	.18	T.	T.	.09		.06	.10						.40					.11				.30	T.		.08	.21	.10	T.			1.67	
Palermo.	Lake Ontario.	.26	.30	.20	.06	.05	T.	T.	.64	.04	T.	T.	T.	.01		.01	.31	T.	.22	.05	.01	.21		.03		T.	.10	.80	.50	.20			4.02	
Perry City.	Oswego.	.20	.10	T.				.02	.02		.16		.03		.04	.22			.04	.06	.06		1.04	.04	.05		.06	.20	.43	T.			2.76	
Philadelphia.	St. Lawrence.	.09	.05					.17							.21	.30		.04		.25	T.	.10			.38		.07	.04	.16	.19	.47			2.92
Potsdam.	do.	.20	.16					.12							.25	.45	.18			.25							.12		.37	.31	.78			4.36
Raquette Lake.	Raquette.	.28	.09	T.	T.			.46							.06	.21	.12	.19	.42	.06				.89				.37	.31	.78			3.15	
Rochester.	Genesee.	.77	.06	T.	.03	T.		.01	T.	.04	T.	.07	T.	.05	.01	.62	.04	.01	.02	.10	.05	.04	T.	.05	T.	T.	.08	.36	.44	.12			1.80	
Romulus.	Oswego.	.36	.26	T.				T.							.42	.02											.30	.01	.13	.30			1.50	
Shortesville.	do.	.07						T.			.50	T.			.18				T.		T.						.30	.07	.05	.04	.06			2.39
Skaneateles.	do.	.50	.10	.06		T.		T.	.15	.05	T.			.22	.30	.05	.03	T.	.07	.08	.05	.10	.25	.10	T.	T.	.03	.07	.05	.04	.06			2.24
Syracuse.	do.	.08	.05	.01	T.	T.		.01			.08	T.	T.		.27	T.	T.	T.	.10	.28	.09	T.	.08	.25	.01	.14	.23	.19	.31				0.77	
Ticonderoga.	Lake Champlain.				T.											.14												.22	.01					
Trudeau.	Lake Saranac.															.05	.18	.12	.08		.10		.30		.60		.40	T.	.70				2.88	
Tupper Lake.	Raquette.	.10	.10					.10								.30	T.			T.	.12	.35	T.		.30	.20	T.	.60	.43	.22			4.60	
Volusia.	Lake Erie.	.65		.05	T.			.04	1.00	T.		.25	.09	T.	.16	.53	.15			.40	.02				.80	.03	.30		1.00				4.68	
Wanakana.	Oswegatchie.							.45							.47	.48		.16	.07	.09	.06	.08		.36	.03	T.	.05	.34	.18	.47			3.53	
Watertown.	Lake Ontario.	.17	.06	T.				T.	.45	T.		.12	T.	T.		.40	T.			.01	.01	T.		T.	.30	T.	T.	.17	.08	.30	T.		1.66	
Wedgewood.	Oswego.	.12	.10					T.	.05	T.		.12	T.	T.		.31	T.		.29	.17	.31	T.		.25		.09	.49	.19	.39	T.			3.79	
Westfield.	Lake Erie.	.31	T.	.06	.06	T.		.16	.49	T.		.06	.13	T.		.31	T.							.11	.09	.13	.80	.23	.20	T.			2.09	
Youngtown.	Lake Ontario.			.03	.15			.02	.																									



TABLE 3.—Maximum and minimum temperatures at selected stations, for December, 1910. District No. 4, Lake Region.

Date.	Wisconsin.										Michigan—Upper Peninsula.										Michigan—Lower Peninsula.							
	Duluth, Minn.		Florence.		Green Bay.		Milwaukee.		Chicago, Ill.		Fort Wayne, Ind.		Escanaba.		Ewen.		Houghton.		Marquette.		Sault Ste. Marie.		Alpena.		Battle Creek.		Cadillac.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	19	6	23	18	29	22	28	22	27	21	32	23	30	24	23	19	24	23	28	24	26	16	31	23	30	25	30	24
2....	18	3	22	15	27	21	27	23	29	24	32	25	26	21	22	15	23	20	24	20	19	14	24	21	29	22	24	20
3....	24	18	22	9	26	22	28	23	31	24	29	16	26	16	25	14	26	20	26	20	18	9	30	30	27	19	27	21
4....	24	18	24	6	27	20	32	26	33	28	29	20	23	18	24	13	23	20	25	21	15	9	25	20	25	16	27	16
5....	24	14	23	11	23	20	32	24	32	29	28	18	24	18	22	-14	26	20	24	19	18	12	24	30	25	16	23	15
6....	14	-1	24	8	29	13	27	20	32	24	26	17	29	16	20	12	25	18	25	18	23	9	28	16	25	17	25	5
7....	9	-2	21	9	23	9	24	11	27	18	26	19	24	11	17	7	19	14	21	11	25	18	27	16	24	13	24	15
8....	6	-10	14	6	15	0	16	8	25	15	26	10	17	9	16	7	16	10	14	8	18	-2	22	11	23	17	18	12
9....	16	-6	17	0	16	-1	34	7	30	15	29	2	20	5	19	-1	20	10	19	6	9	-7	19	7	20	4	18	3
10....	25	9	24	5	26	13	32	25	34	27	32	14	30	13	24	11	26	11	26	12	18	7	28	8	23	8	18	7
11....	9	-1	22	13	24	9	28	7	29	9	32	21	23	17	20	10	23	16	24	19	22	18	28	19	28	19	26	18
12....	10	-7	21	10	24	9	26	7	24	7	30	15	26	17	19	9	22	14	24	14	19	10	28	20	30	18	25	16
13....	33	6	32	-3	24	4	27	13	30	19	25	14	29	10	31	-9	35	11	37	14	29	10	32	17	28	3	26	20
14....	36	23	36	28	36	22	41	25	41	25	38	17	36	27	32	23	36	26	39	28	26	27	37	29	36	10	35	25
15....	26	10	35	10	32	15	40	22	38	28	36	24	31	9	32	9	25	12	28	12	32	-2	33	11	35	18	30	12
16....	20	12	17	-3	20	8	28	15	34	26	30	17	18	9	20	8	18	10	20	11	5	-6	15	6	36	10	16	10
17....	24	10	30	10	31	17	37	23	41	27	38	13	33	16	23	1	30	18	34	17	26	4	36	14	32	12	34	16
18....	31	19	30	11	31	17	32	22	39	26	39	23	34	19	31	2	34	24	33	23	31	26	35	23	35	22	30	22
19....	22	2	30	10	30	13	32	14	33	18	33	28	27	11	28	10	25	12	23	14	29	7	30	14	30	22	28	15
20....	13	-6	14	9	21	10	19	10	21	12	28	17	19	13	17	3	18	14	19	15	12	2	14	11	22	14	18	13
21....	24	-1	22	2	19	4	24	8	29	10	27	12	23	12	26	-4	30	15	25	11	24	-6	22	1	24	10	24	9
22....	30	24	29	5	32	16	34	20	36	24	35	6	35	18	33	18	32	23	33	16	32	24	30	12	32	8	30	15
23....	25	-2	27	7	32	13	34	15	35	18	48	16	31	16	27	15	30	12	31	13	35	22	35	27	34	26	32	25
24....	7	-11	20	-1	17	2	19	12	18	9	36	13	19	13	26	14	14	-5	16	13	22	-5	27	13	26	15	26	15
25....	15	5	19	-12	25	0	30	11	32	13	24	10	27	13	24	-20	22	-9	24	10	15	-10	23	9	20	-3	16	4
26....	26	4	20	8	24	17	31	22	32	25	31	20	23	10	23	9	27	18	27	16	25	15	28	18	29	18	25	15
27....	29	14	28	16	31	13	39	28	43	29	40	20	31	17	30	16	32	23	35	25	34	22	36	22	37	16	30	20
28....	24	18	28	19	29	13	38	33	38	33	41	32	30	23	30	2	27	22	29	26	27	16	36	17	36	28	32	25
29....	23	-11	26	16	28	18	35	14	38	19	35	32	29	12	25	14	30	4	29	9	30	5	34	21	34	30	33	25
30....	15	-20	16	-10	21	2	23	7	25	12	33	18	26	-3	14	-2	14	-3	19	0	5	-13	21	-2	32	12	25	2
31....	30	4	32	5	33	21	36	23	40	25	42	15	32	26	33	7	38	14	35	19	35	-2	34	7	35	10	35	1
Mns..	21.0	4.5	24.1	7.6	26.0	12.3	30.1	17.4	32.1	20.6	32.6	17.6	26.8	14.7	24.4	7.0	25.5	14.4	26.3	15.6	23.0	8.0	28.1	15.2	29.1	15.3	26.1	14.9

Date.	Michigan—Lower Peninsula.						Ohio.								New York.								Vermont.						
	Detroit.		Muskegon.		Saginaw, W. S.		Cleveland.		Lima.		Sandusky.		Toledo.		Erie, Pa.		Buffalo.		Canton.		Rochester.		Syracuse.		Burlington.		Northfield.		
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	32	24	34	30	31	23	35	28	30	23	33	26	32	25	35	27	34	20	29	19	33	23	30	19	29	23	28	22	
2....	26	21	30	28	26	16	28	26	30	25	28	25	31	24	31	25	27	18	19	16	26	19	24	19	26	20	25	15	
3....	29	25	28	25	30	22	31	25	30	20	32	25	32	25	31	25	31	24	21	13	29	19	28	24	24	17	24	5	
4....	34	21	25	20	33	13	32	25	33	24	35	26	31	21	31	26	29	20	16	7	27	21	27	15	19	12	24	3	
5....	27	17	28	20	28	.....	31	27	31	24	32	27	28	18	27	22	23	16	20	-4	23	14	17	8	16	-3	15	-7	
6....	23	18	26	15	25	.....	28	24	26	23	31	17	25	18	23	16	23	16	6	-8	23	13	17	4	9	-8	8	-13	
7....	26	18	28	23	27	.....	27	18	28	13	26	14	28	21	25	21	28	19	-9	24	14	24	8	8	-1	13	-9	.....	
8....	22	15	24	19	24	14	23	18	26	13	24	17	27	17	27	20	27	14	25	7	26	16	26	18	28	8	27	3	
9....	22	11	24	18	22	4	22	16	24	5	23	15	26	14	23	20	20	12	7	-15	19	14	18	13	20	-4	19	-7	
10....	25	17	24	12	24	7	28	13	32	16	28	14	27	14	26	11	24	16	4	-18	23	10	20	10	-9	13	-15	.....	
11....	28	19	24	22	29	20	28	26	32	22	28	21	30	22	27	23	24	16	7	-13	23	15	15	6	12	-10	14	-19	
12....	33	19	30	20	30	18	31	20	27	15	29	19	31	20	29	22	23	15	8	-16	22	15	14	8	12	-5	18	-12	
13....	25	13	33	20	31	9	26	20	26	6	25	10	29	15	27	19	31	9	22	-3	28	16	28	12	17	7	17	-8	
14....	35	21	38	32	39	27	36	23	34	17	36	22	38	22	35	23	37	30	34	22	36	26	39	27	38	15	35	9	
15....	35	10	38	22	35	11	34	19	38	22	34	15	36	14	33	12	36	8	33	-5	35	9	36	2	38	0	35	-2	
16....	22	7	24	18	21	9	19	13	25	12	21	9	24	11	20	15	15	6	4	-8	11	5	10	1	13	1	10	-6	
17....	30	16	30	20	34	17	29	12	35	15	30	14	31	14	28	17	31	13	17	-6	27	5	28	9	13	0	9	-15	
18....	38	22	38	25	36	21	39	20	39	29	39	23	40	24	40	20	40	23	36	12	38	21	35	22	33	12	28	6	
19....	30	19	30	21	31	20	32	21	39	29	33	21	35	22	32	26	38	26	36	29	37	29	37	20	39	29	37	16	
20....	19	12	22	19	22	12	21	16	30	19	21	15	22	16	27	18	28	13	31	12	29	14	29	16	31	25	30	8	
21....	22	10	27	11	23	4	22	16	26	14	22	12	29	14	23	14	16	8	12	-3	16	10	16	7	25	6	25	6	
22....	32	18	33	9	31	12	32	12	33	14	36	14	33	15	34	18	32	12	21	-14	27	7	24	7	12	-2	15	-8	
23....	32	25	36	30	35	28	38	27	36	22	38	26	35	27	40	32	40	32	39	10	38	26	37	24	32	7	29	-5	
24....	25	18	31	20	29	21	27	18	31	12	28	18	28	18	32	25	32	23	37	28	36	24	38	26	38	31	36	29	
25....	21	13	23	18	22	1	22	17	21	10	24	17	22	11	25	19	23	13	28	-10	24	15	26	6	31	-2	29	-7	
26....	30	20	26	18	31	19	37	22	26	20	36	24	34	22	37	20	34	19	25	-11	35	15	32	6	24	-5	18	-11	
27....	36	19	41	18	40	23	37	23	.....	18	37	23	36	19	38	26	36	26	33	21	39	27	38	27	32	24	31	18	
28....	36	31	36	24	35	25	47	32	.....	31	46	32	40	32	47	30	39	30	33	27	39	30	42	28	33	30	35	24	
29....	36	30	34	30	35	30	38	31	38	32	34	31	35	31	40	32	36	30	30	24	35	30	41	33	35	29	39	30	
30....	30	9	30	16	31	6	32	15	34	17	31	15	31	14	33	14	30	3	27	-18	32	4	34	-1	36	-4	45	-6	
31....	33	10	38	15	35	4	37	13	35	15	39	14	36	14	34	10	32	3	24	-30	27	0	24	-4	19	-13	4	-14	
Mns.	28.8	17.7	30.1	20.6	29.6	15.6	30.6	20.5	30.7	18.6	30.9	19.4	31.0	19.2	31.0	20.9	29.6	17.1	22.7	1.8	28.6	16.3	27.5	13.8	24.3	7.4	23.7	1.0	.....



Climatological Data for December, 1910.  
DISTRICT NO. 5, UPPER MISSISSIPPI VALLEY.

GEORGE M. CHAPPEL, District Editor.

GENERAL SUMMARY.

The weather over the upper Mississippi Valley during December, 1910, was cold, and, except in North Dakota, unusually dry; but as a whole the month was pleasant and favorable for outdoor work, to railroad transportation, and all lines of business not dependable on the surface water supply. Although the temperature was below the normal in all parts of the district, the monthly mean was 5.3° higher than the average for December, 1909, and the average precipitation was 1.51 inch less than it was for the same month last year. The percentage of sunshine was above the normal, and the month was characterized by the absence of severe winter storms. The average depth of snowfall was 5.3 inches, as compared with 14.4 inches in December, 1909.

The month opened with fair weather, which continued during the first three days. From the 4th to the morning of the 7th light snow flurries were quite general over the northern and rain over the extreme southern portions of the district, due to the eastward passage of an area of comparatively low barometric pressure across the middle Mississippi Valley. A disturbance over Lake Superior caused general snow flurries over Minnesota, Wisconsin, Iowa, and Illinois on the night of the 9th. With the exception of light and scattered snow flurries on the 19th and 20th, fair weather prevailed generally from the 10th to the 22d, after which precipitation was frequent, the heaviest being in the form of rain over the southern sections on the 28th and 29th.

The first general cold wave of the winter, with temperature near or below zero in the southern section, did not occur until the 24th, although temperatures from -10° to -20° prevailed over the northern part of the district from the 5th to the 13th, and were again below zero at many stations on the 19th and 20th. The lowest temperature of the month was, however, recorded in northern Minnesota on the 30th. There were no unusually high temperatures recorded, but the 14th was the warmest day generally.

TEMPERATURE.

The temperature was below the normal in all sections, the average departure ranging from -0.1° in Minnesota to -2.8° in Illinois, and the monthly means for the several States in the district were as follows: North Dakota, 9.9°; Minnesota, 14.7°; South Dakota, 16.8°; Wisconsin, 16.8°; Iowa, 23.1°; Missouri, 28.7°; Indiana, 24.4°; and Illinois, 26°. The most striking features of the temperature were its comparatively small variability during the month and the fact that the severe cold waves were confined to the extreme northern portion of the district, where the minima on several days ranged from -15° to -45°. Comparatively moderate temperatures prevailed during the first five days of the month, except over North Dakota and northwestern Minnesota, where temperatures from zero to -10° were recorded. On the 6th a cold wave spread over the district which continued until the 13th, and caused temperatures of zero or below on one or more days north of northern Iowa and Illinois, and from -20° to -29° at several stations in North Dakota. The 14th was generally the warmest day of the month, and moderate temperatures continued until the 20th, when another cold wave started in the Northwest, culminating in temperatures of zero or below north of central Iowa. From the 25th to the 29th

the weather was moderate except over the extreme northern sections. Abnormally low temperatures obtained over North Dakota and northern Minnesota on the 30th, which was the coldest day of the month at many stations, the lowest temperature recorded being -47° at Warroad, Minn.

The monthly mean temperature for the district, as shown by the records of 291 stations, was 19.6°, which is 1.3° below the normal. The highest monthly mean was 35.2°, at Cairo, Ill., and the lowest was 4°, at Pembina, N. Dak. The highest temperature was 63°, at Cobden, Ill., on the 28th, and the lowest was -47°, at Warroad, Minn., on the 30th.

PRECIPITATION.

The average monthly precipitation was below the normal in all parts of the district, except in North Dakota, although there were several stations in Minnesota, Wisconsin, and Illinois from which a slight excess was reported. The average amounts for the several States or parts of States ranged from 0.40 inch in South Dakota to 1.81 inch in Indiana, and the departures varied from +0.09 inch in North Dakota to -1.23 inch in Missouri. Practically all of the precipitation was in the form of snow over the northern and central portions of the district, and a majority of the storms caused snow in the southern portion; but the largest amounts recorded during the month were in the form of rain over southern Iowa, northeastern Missouri, southern Illinois, and northeastern Indiana and fell on the 28th and 29th. The number of storms with measurable precipitation were not well distributed geographically, but the precipitation was fairly well distributed throughout the month, except in the southern section where the bulk of it fell during the 28th and 29th.

The average precipitation for the district, as shown by the records of 303 stations, was 0.69 inch, which is 0.67 inch below the normal. The averages for the various States were as follows: North Dakota, 0.49 inch; Minnesota, 0.43; South Dakota, 0.40; Wisconsin, 0.81; Iowa, 0.44; Missouri, 0.71; Indiana, 1.81; and Illinois, 1.24 inch. The greatest amount, 3.39 inches, occurred at Cairo, Ill., and the least, a trace, at Amenia, N. Dak. The greatest amount in 24 consecutive hours, 1.72 inch, occurred at Cairo, Ill., on the 28th-29th. The average depth of unmelted snowfall was 5.3 inches; the averages for the several States or parts of States within the district were as follows: North Dakota, 5.4 inches; Minnesota, 5.4; South Dakota, 2.8; Wisconsin, 9.7; Iowa, 3.3; Missouri, 0.9; Indiana, 10.1; and Illinois, 3.8 inches. The greatest amount was 17.5 inches, at Meadow Valley, Wis., and the least, a trace, at 14 scattered stations. Measurable precipitation occurred on an average of five days.

SUNSHINE AND CLOUDINESS.

The average number of clear days was 13; partly cloudy, 7; cloudy, 11. The duration of sunshine was slightly above the normal.

WIND.

Northwest winds prevailed. The highest velocity reported was 42 miles per hour from the northwest at St. Paul, Minn., on the 19th.

MISCELLANEOUS.

The conditions were favorable during the early part of the month for finishing the corn harvest and all of the crop was secured in good condition.



The scarcity of water assumed serious proportions in parts of Illinois, Missouri, Iowa, and in the valley of the Red River of the North. Many streams and wells are dry and cisterns empty, and in a few instances, farmers have been obliged to sell their stock because of no facilities for watering it. The coal mines at Enterprise, Iowa, have kept two tank cars busy hauling water from Des Moines, and most of the railroads in Iowa have experienced considerable trouble in obtaining sufficient water for their engines.

The droughty conditions which have prevailed since early in October have also injuriously affected the fall sown wheat in southern Iowa, Missouri, and Illinois. The ice harvest was begun during the latter half of the month as far south as central Iowa, with the ice from 8 to 10 inches in thickness.

#### RIVERS.

The stage of all rivers in the district remained low. The Red River of the North showed the lowest stage on record for December.

The Mississippi River froze over at Dubuque, Iowa, on the night of the 7th-8th, or several days earlier than the average date. The water fell from 0.9 foot on the 1st to - 0.6 foot on the 6th, or the lowest stage ever recorded at this station. This low stage was not caused by natural conditions, however, but was due to ice gorges above Prairie du Chien, Wis. The low water at Dubuque partially cut off the water supply of the Union Electric Company for several days and it was only with difficulty that their plant could be kept running. The water cut through the gorges on the 6th and by the morning of the 7th, the water at Dubuque had risen to 0.7 foot. Similar conditions existed at Prairie du Chien and other towns on the Mississippi in this district. At the close of the month the ice in the Mississippi River was 10 inches thick,

75892-11-4

and dealers were beginning to put up their annual supply.—*J. H. Spencer, Local Forecaster.*

Owing to the formation of ice gorges on the Le Claire Rapids, a further fall in the Mississippi River began on the 2d, a stage of - 1.2 feet, the lowest on record at the Davenport station, being observed on the morning of the 5th. The stream became closed on the night of the 11th-12th and at the end of the month the average thickness of the ice was about 11 inches.—*J. M. Sherier, Local Forecaster.*

#### DRAINAGE AND ENGINEERING NOTES.

The following shows the work done during December by the United States Army Engineers, under the supervision of Mr. A. O. Rowse, assistant engineer, in connection with the survey of the Des Moines River.

The topography and soundings were platted from Ottumwa to the mouth of the Des Moines River, a distance of 90 miles, making a total of 198 miles, and completing this part of the work. An index map on a scale of 1 inch equals 2 miles, was about 65 per cent completed. The excavation was computed for 120 miles of channel, 60 per cent of the total. Sixty miles of profile showing water surface at low water, river bottom, and both banks were platted, making 168 miles of profile platted or 85 per cent of the total. One-foot contours were drawn on 10 miles of map, making a total of 19 miles drawn or 10 per cent of the total.

In order to prevent a water famine at Davenport, Iowa, the Davenport Water Company built a dam 600 feet out into the river to protect the intake at the pumping station from which the water is drawn from the river. The dam is a temporary structure made of over 1,000 bags of sand, and this precaution raised the level of the river at the intake 8 or 10 inches.—*Marshalltown, Iowa, Times-Republican.*



TABLE 1.—Climatological data for December, 1910. District No. 5, Upper Mississippi Valley.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.					Sky.					Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
North Dakota.																				
Amenia.	Cass.	984	12	9.2	-3.3	40	15	-19	30	50	T.	-0.35	T.	0	11	4	16	nw.	C. E. Wood.	
Bottineau.	Bottineau.	1,538	14	6.4	-1.6	34	15	-28	6	47	0.49	+0.19	0.14	7.8	5	6	8	17	nw.	J. A. Kemp.
Cando.	Towner.	1,488	8	8.1	+1.7	42	18	-29	0	45	0.16	-0.28	0.14		2	19	4	8	w.	G. Bennett.
Crosby.	Williams.	1,482	3	10.4		33	17	-19	31	39	0.75		0.27	6.0	4	17	9	5	sw.	H. C. Kaschan.
Devils Lake.	Ramsey.	1,482	4	9.8	+1.8	40	21	-20	29	42	0.61	+0.22	0.29	7.1	8	5	13	13	nw.	U. S. Weather Bureau.
Donnybrook.	Ward.	1,760	10	12.4	-2.7	39	20	-16	31	44	0.35	-0.31	0.15	3.5	3	17	4	10	nw.	C. J. De Vere.
Dunseith.	Rosette.	1,524	12	7.4	-2.4	33	14	-27	6	37	0.80	+0.45	0.20	8.0	5	20	3	8	w.	L. H. Trowbridge.
Edmore.	Ramsey.	1,524	4	6.7		37	13	-27	29	35	0.10		0.10	1.0	1	15	13	3	nw.	H. R. Aslakson.
Forman.	Sargent.	1,249	15	22.8	+8.0	46	22	-8	24	36	0.55	+0.18	0.25	6.0	3	6	2	23	nw.	A. Maltby.
Grafton.	Walsh.	827	12																H. Lamoure.	
Granville.	McHenry.	1,504	3	9.8		38	21	-25	6	40	0.56		0.19	17.0	9	16	5	10	nw.	W. A. Christiansen.
Hannah.	Cavalier.	1,568	4	8.4		34	21	-34	30	40	0.60		0.30	6.0	3				J. Moffatt.	
Hansboro.	Towner.	1,568	2	8.8		34	26	-28	30	42	0.38		0.28	3.8	4	19	3	9	nw.	Geo. Dale.
Hillsboro.	Tralli.	901	4	11.4		37	13	-20	30	37	0.40		0.20	4.0	6	13	6	12	nw.	M. H. Norman.
Lakota.	Nelson.	1,519	3			35	21	-34	30	54	0.67		0.20		4	8	5	18	nw.	C. R. Pelles.
Langdon.	Cavalier.	1,615	14	7.6		35	21	-34	30	54	0.67		0.20		4	8	5	18	nw.	J. Woolner.
Larimore.	Grand Forks.	1,134	14	9.4	-2.1	37	21	-24	30	55	1.85	+1.62	0.75	10.5	3	7	4	20	w.	Reuben Gray.
Labon.	Ransom.	1,091	8	12.0		40	27	-15	30	43	0.15		0.10	1.5	2	11	5	15	nw.	H. K. Adams.
McKinney.	Ward.	1,640	15	8.9	-1.7	38	20	-25	6	48	0.35	-0.11	0.15	3.5	3	8	17	6	nw.	N. P. Swensen.
Manfred.	Wells.	1,005	8	12.2		38	13	-21	6	35	0.80		0.20	8.0	5	7	15	9	nw.	P. B. Anderson.
Mayville.	Tralli.	975	14																N. C. McDonald.	
Mint.	Ward.	1,557	11	12.6	+0.5	40	10	-21	6	40	0.48	+0.15	0.25	4.8	3	16	3	12	w.	W. J. Farris.
Minto.	Walsh.	820	16	12.0	+1.3	36	13	-25	30	39	0.43	+0.05	0.20		4	9	9	13	nw.	S. S. Marsh.
Oriska.	Barnes.	1,270	4	13.9		46	13	-17	12	36	0.35		0.10	3.5	5	5	17	9	nw.	W. E. Williams.
Park River.	Walsh.	906	6	9.7		38	21	-36	30	40	0.37		0.14	5.5	4	3	23	5	n.	A. Heyward.
Pembina.	Pembina.	789	11	4.0	-3.8	32	27	-34	30	37	0.40	-0.24	0.10	4.0	6	10	8	13	w.	C. W. Shumaker.
Power.	Richland.	1,030	17	11.3	-0.8	44	15	-21	12	43	0.57	+0.02	0.30	5.7	4				nw.	J. A. Power.
Pratt.	McHenry.		5																C. H. Butts.	
Towner.	do.		3	8.4		36	21	-25	6	35	0.30		0.10	3.0	3	15	10	6	nw.	Belle Bagley.
University.	Grand Forks.	820	18	8.1	-3.3	36	13	-25	29	55	0.40	-0.13	0.10	4.0	7	5	6	20	nw.	W. R. Holgate.
Wahpeton.	Richland.	962	18	10.2	-5.0	46	13	-22	30	47	0.55	+0.18	0.20	5.0	4	11	2	18	nw.	E. G. Burch.
Wahalla.	Pembina.	906	5								0.80		0.45	8.0	3				nw.	C. H. Lee.
Westhope.	Bottineau.		3																C. W. Clark.	
Willow City.	do.	1,471	16	7.8	-2.2	41	21	-24	8	44	0.20	-0.21	0.10	2.0	3	11	11	9	nw.	M. A. Ostby.
Minnesota.																				
Albert Lea.	Freeborn.	1,229	20	18.6	+0.5	50	14	-11	24	34	0.20	-0.80	0.10	4.0	3	10	17	4	nw.	Edward Carey.
Alexandria.	Douglas.	1,391	16	12.4	+0.5	41	13	-17	24	51	0.48	-0.10	0.23	5.3	7	16	2	13	nw.	P. O. Unumb.
Angus.	Polk.	870	8	7.0		31	13	-31	30	40	0.36		0.12	3.6	5	1	14	16	nw.	John Nadvornik.
Bagley.	Clearwater.		4	9.1		38	13	-36	24	43	0.42		0.12	9.7	8	4	9	18	nw.	Jens Nelson.
Baudette.	Beltrami.	1,084	1																Franz W. Schmidt.	
Beardsley.	Bigstone.	1,090	17																Roy A. Smith.	
Beaulieu.	Mahnomen.	1,200	8																	
Bird Island.	Renville.	1,039	20	17.6	+0.8	46	14	-15	24	36	0.10	-0.51	0.06	1.1	2	6	7	18	nw.	Dr. F. L. Puffer.
Caledonia.	Houston.	1,179	17	18.8	-0.4	44	14	0	12	33	0.77	-0.52	0.30	7.9	6	13	0	18	nw.	W. D. Belden.
Campbell.	Wilkins.	984									0.42		0.15	6.5	5				nw.	J. T. Neisess.
Cass Lake.	Cass.	1,300	4										0.15	4.5	2				nw.	C. W. Burns.
Collegeville.	Stearns.	1,282	17	18.6	+0.4	43	14	-10	23	29	0.15	-0.35	0.13	4.0	2	17	1	13	nw.	Fridolin Tembreul.
Crookston.	Polk.	863	30	9.5	-2.2	32	14	-24	30	40	0.40	-0.11	0.15	4.0	6	7	4	20	n.	A. G. Anderson.
Detroit.	Becker.	1,364	14	7.6	-2.6	35	21	-34	24	57	0.56	+0.04	0.32	7.5	5	13	4	14	nw.	G. W. Peoples.
Fairmont (near).	Martin.	1,240	23	20.6	+0.5	51	14	-7	12	31	0.10	-0.98	0.10	1.0	1	10	18	3	nw.	W. F. Wherland.
Faribault.	Rice.	1,008	13	21.8	+3.4	53	14	-17	24	31	0.30	-0.32	0.13	6.5	5				nw.	Dr. A. C. Tanner.
Farmington.	Dakota.	902	22	18.5	-0.3	48	14	-16	24	40	0.28	-0.96	0.10	3.0	3	13	5	13	nw.	D. F. Akin.
Fergus Falls.	Ottertail.	1,210	18	14.4	-0.2	40	14	-17	24	27	0.83	+0.14	0.50	8.1	10	10	10	11	nw.	C. E. Kissenger.
Fort Ripley.	Crow Wing.	1,136	4	13.2		41	14	-24	30	42	0.41	-0.28	0.22	6.5	5	14	0	17	nw.	J. J. Tucker.
Foreston.	Polk.	1,289	1	9.3		35	22	-31	24	30	0.38		0.15		5	3	11	17	nw.	O. N. Hem.
Fram.	Marshall.			9.9		30	14	-36	29	55						0	26	5	nw.	A. W. Clark.
Glencoe.	McLeod.	1,000	14	18.7	+1.3	45	14	-14	24	36	0.27	-0.29	0.25	2.7	2	14	10	7	nw.	C. G. Selvig.
Grand Meadow.	Mower.	1,538	23	18.6	+0.1	50	14	-11	24	34	0.40	-0.91	0.18	4.5	4	22	2	7	nw.	C. F. Greening.
Hallock.	Kittson.	815	11	7.4	-0.8	32	17	-39	30	47	0.67	+0.10	0.20	6.8	7	21	1	9	n.	D. A. Robertson.
Hastad.	Norman.	870	4	7.8		36	13	-21	30	54	0.26		0.15	2.5	2	16	8	7	nw.	A. G. Holstrom.
Hinckley.	Pine.	1,030	5	11.9		40	14	-18	30	38	0.80		0.25	8.5	4	3	8	20	nw.	W. R. Newman.
International Falls.	Koochiching.	1,112	2	9.2		34	14	-38	30	42	1.30		0.40	13.0	6	8	13	10	w.	Ree Roe.
Kelliher.	Beltrami.	3	10.8			38	14	-25	29	55	1.02		0.30	14.2	7	8	14	9	nw.	A. Gilmour.
Lake Crystal.	Blue Earth.	3	20.2			54	14	-10	24	39	0.20		0.20	2.0	1	11	1	19	nw.	W. P. Cobb.
Leech Lake Dam.	Cass.	1,301	22	6.5	-5.9	30	13	-32	30	33	0.71	-0.18	0.22	10.3	8	1	14	16	nw.	Hans Olson.
Little Fork.	Koochiching.			8.8		38	13	-44	30	48	0.58		0.20	6.5	5	13	7	11	nw.	O. C. Olson.
Long Prairie.	Todd.	1,299	18	15.0	+1.4	40	13	-23	23	48	0.40	-0.50	0.30	4.0	2	11	2	18	nw.	R. M. Sheets.
Lynd (2).	Lyon.	1,175	18	21.2	+1.7	52	14	-10	12	38	0.03	-0.61	0.03	0.5	1	10	6	15	sw.	J. W. Rouse.



TABLE 1.—Climatological data for December, 1910. District No. 5—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.				Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of overcast days.	Prevailing wind direction.	
Minnesota—Continued.																				
Warroad.	Roseau.	1,069	1	7.0	.....	34	22	-47	30	44	0.86	.....	0.30	12.0	6	7	2	22	sw.	J. H. Sawyer.
West Concord.	Dodge.	1,232	1	18.2	.....	49	14	-15	24	35	0.30	.....	0.30	3.0	1	31	7	3	nw.	H. H. Orcutt.
Windom.	Cottonwood.	1,336	4	21.7	.....	52	14	-11	24	37	0.04	.....	0.04	0.5	1	10	17	10	nw.	T. C. Richmond.
Winnebago.	Faribault.	1,100	11	19.8	+0.8	48	14	-9	24	47	0.20	-0.71	0.20	2.0	1	19	4	8	nw.	H. H. Haight.
Winnibigoshish.	Itasca.	1,300	22	10.4	-2.4	35	13	-34	30	41	0.91	+0.12	12.0	9	8	9	14	nw.	U. S. Engineer Corps.	
Winona.	Winona.	700	15	20.6	-0.4	47	14	-4	9	37	0.43	-0.77	0.18	4.9	7	20	1	10	nw.	P. C. Myers.
Worthington.	Nobles.	1,683	15	18.9	-0.7	43	14	-9	24	43	0.05	-0.73	0.05	0.5	1	15	4	12	s.	M. P. Mann.
Zumbrota.	Goodhue.	917	15	19.0	+0.1	49	14	-11	24	36	0.17	.....	0.10	2.2	2	18	7	6	nw.	W. C. Rowell.
South Dakota.																				
Milbank.	.....	.....	.....	16.8	-1.5	51	14	-12	24	53	0.40	-0.38	0.30	2.8	2	12	1	18	nw.	I. T. Patridge.
Wisconsin.																				
Antigo.	Langlade.	1,480	16	16.5	-2.0	38	14	-11	9	28	0.84	.....	0.30	8.5	7	6	3	22	w.	Elton C. Larzelere.
Barron.	Barron.	1,115	18	12.4	-3.9	37	14	-19	9	42	0.75	-0.42	0.30	9.0	4	16	8	7	se.	Wm. A. Kent.
Rock.	Rock.	750	23	21.8	-2.2	40	27	-1	13	27	0.95	-0.94	0.30	9.5	6	17	0	14	w.	Smith Observatory.
Big St. Germain Dam.	Vilas.	1,590	1	15.0	.....	39	14	-12	25	44	0.83	.....	0.16	8.5	10	12	3	16	sw.	Oscar Brehmer.
Brodhead.	Green.	812	12	20.6	-1.6	40	14	-6	13	32	0.78	-1.01	0.20	6.2	6	19	3	9	nw.	Hector D. Kirkpatrick.
Burnett.	Dodge.	880	6	18.3	.....	36	14	-8	9	27	0.47	.....	0.18	8.2	7	12	3	16	nw.	George W. Smith.
Darlington.	Lafayette.	867	5	19.8	.....	40	15	-9	13	30	.....	.....	.....	.....	.....	.....	.....	.....	nw.	S. P. Nelson.
Deerskin Dam.	Forest.	1,625	1	.....	.....	40	29	.....	.....	33	0.56	.....	0.20	7.8	6	4	11	16	w.	Wm. E. O'Neal.
Delevan.	Walworth.	920	17	20.4	-3.6	40	27	-6	9	42	0.39	-1.25	0.13	5.0	7	13	2	16	nw.	Elwood S. Austin.
Dodgeville.	Iowa.	1,116	11	17.8	-3.4	39	14	-5	24	29	0.59	-1.03	0.20	6.0	4	12	1	18	nw.	Geo. H. Butler.
Downing.	Dunn.	983	8	14.1	.....	40	14	-18	9	48	1.20	.....	0.40	12.0	4	3	2	26	w.	Eugene F. Stoddard.
Eau Claire.	Eau Claire.	800	19	16.6	-2.1	41	14	-13	9	38	0.84	-0.64	0.20	10.2	7	8	14	9	nw.	Robert D. Whitford.
Grand Rapids.	Wood.	1,021	11	15.3	-4.7	39	14	-15	9	42	1.90	+0.53	0.66	16.5	7	10	8	13	w.	Willis B. Raymond.
Grantsburg.	Burnett.	1,095	19	14.4	-2.3	41	13	-23	22	47	1.50	+0.27	0.40	15.0	6	7	2	22	nw.	Theodore Olsen.
Hancock.	Waushara.	1,091	18	17.4	-2.5	40	14	-15	9	33	0.80	-0.54	0.30	8.0	4	6	10	15	nw.	Frederick B. Hamilton.
Hatfield.	Jackson.	973	15	16.1	-2.4	42	14	-15	9	45	0.99	-0.37	0.22	12.5	6	12	9	10	s.	Walter S. Woods.
Hayward.	Sawyer.	1,197	19	12.5	-3.6	37	14	-27	8	41	1.00	-0.09	0.40	10.0	4	7	13	11	se.	William E. Swain.
Hillsboro.	Vernon.	1,000	19	16.0	-4.0	41	14	-16	9	43	1.15	-0.44	0.30	11.5	7	17	10	4	w.	Emil V. Wernick.
Koepenick.	Langlade.	1,693	20	13.9	-4.2	40	14	-13	25	50	0.95	-0.31	0.20	9.5	8	0	16	15	nw.	Edward S. Koepenick.
Lac du Flambeau.	Vilas.	.....	1	15.2	.....	38	14	-13	5	36	1.70	.....	0.40	17.0	9	12	8	14	s.	W. J. Lovett.
La Crosse.	La Crosse.	714	38	20.2	-2.6	46	14	-3	9	32	0.67	-0.66	0.30	9.7	10	9	12	10	nw.	U. S. Weather Bureau.
Lake Mills.	Jefferson.	897	19	19.2	-3.5	37	15	-5	9	27	0.65	-1.08	0.20	7.0	8	8	9	14	nw.	S. Newton Dexter Smith.
Lancaster.	Grant.	1,070	20	20.0	-1.3	43	15	-7	11	31	0.07	-1.21	0.03	6.0	4	12	11	8	w.	Edward Pollock.
Long Lake.	Oneida.	1,592	2	13.3	.....	38	17	-24	30	46	0.68	.....	0.14	10.5	12	6	5	20	nw.	Louise Frank.
Madison.	Dane.	974	32	20.6	-2.1	40	14	-3	9	25	0.56	-1.21	0.16	5.5	9	9	7	15	nw.	U. S. Weather Bureau.
Mather.	Juneau.	962	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	nw.	Frank Evans.
Mauston.	.....	882	14	18.8	-0.6	40	14	-11	9	34	0.53	-0.59	0.25	9.0	3	17	4	10	nw.	Eugene L. Hitchcock.
Meadow Valley.	.....	974	19	15.7	-3.3	41	14	-20	9	46	0.80	-0.41	0.22	17.5	7	7	14	10	nw.	Charles H. Johnson.
Medford.	Taylor.	1,420	19	15.8	-2.1	39	14	-14	9	32	0.80	-0.49	0.20	8.0	5	0	14	17	s.	William Zeit.
Merrill.	Lincoln.	1,267	4	.....	.....	.....	.....	.....	.....	.....	0.51	.....	0.16	.....	4	15	0	16	n.	Wm. T. Hunter.
Minocqua.	Oneida.	1,604	6	11.9	.....	38	14	-23	30	47	0.64	.....	0.13	12.0	10	2	10	19	w.	Benjamin W. Applebee.
Mondovi.	Buffalo.	738	2	16.8	.....	44	14	-14	9	49	0.36	.....	0.08	11.5	9	16	5	10	nw.	Dr. Charles Hebard.
Mount Horeb.	Dane.	1,226	6	19.6	.....	40	27	-3	12	25	0.95	.....	0.32	9.0	6	9	8	14	nw.	W. M. Lewis.
Muscoda.	Grant.	666	1	18.4	.....	37	27	-11	13	41	1.29	.....	0.30	4.6	7	11	11	9	nw.	Henry Eckstein.
Neillsville.	Clark.	996	21	16.8	-2.3	40	14	-18	9	45	0.65	-0.98	0.40	15.0	5	10	0	21	nw.	William Heaslett.
New Richmond.	St. Croix.	990	5	16.0	.....	48	14	-19	24	40	1.21	.....	0.40	10.0	5	0	21	10	nw.	Franc A. R. Van Meter.
Osceola.	Folk.	806	19	15.0	-1.3	41	13	-18	24	57	0.39	-0.78	0.19	6.0	4	13	5	13	s.	Charles W. Staples.
Park Falls.	Price.	1,492	18	15.1	.....	38	13	-16	30	38	0.13	.....	0.04	4.0	4	13	5	13	w.	Flambeau Paper Co.
Portage.	Columbia.	809	14	19.0	-2.2	42	14	-10	9	37	0.33	-1.23	0.10	8.0	5	15	4	12	nw.	Jeremiah Hanftan.
Prairie du Chien.	Crawford.	690	23	20.2	-3.4	45	14	-5	24	40	0.34	-1.11	0.08	5.8	7	9	7	15	nw.	Jas. A. Gillis.
Prentice.	Price.	1,551	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	nw.	Joseph G. Lash.
Rhineland.	Oneida.	1,550	4	15.9	.....	40	14	-10	9	32	0.52	.....	0.13	10.0	7	3	10	18	nw.	John Lind.
Sauk City.	Sauk.	758	2	18.8	.....	40	14	-10	9	36	0.45	.....	0.20	2.5	3	11	5	15	.....	Killen Derleth.
Shullsburg.	Lafayette.	1,019	4	19.6	.....	40	15	-6	24	25	0.46	.....	0.18	4.5	5	15	5	11	nw.	Harrison B. Chamberlin.
Solon Springs.	Douglas.	1,083	4	13.04	.....	35	14	-24	8	42	0.85	+0.53	0.30	8.5	5	6	7	11	nw.	John M. Sayles.
Spooner.	Washington.	1,104	15	13.6	-2.5	38	14	-22	30	38	0.73	-0.04	0.32	9.0	8	11	6	14	nw.	Horace A. Bresee.
Stanley.	Chippewa.	1,082	6	14.4	.....	39	14	-13	9	46	0.77	.....	0.25	9.0	8	11	6	14	nw.	W. Humphrey Scott.
Stevens Point.	Portage.	1,113	17	16.2	-2.8	39	14	-19	9	41	1.50	+0.24	0.10	8.5	9	7	12	8	nw.	Garry E. Culver.
Sugar Camp Dam.	Oneida.	1,582	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	nw.	Robert Hayes.
Twin Lakes Dam.	Vilas.	1,635	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	n.	Albert D. Hansen.
Valley Junction.	Monroe.	930	18	15.8	-3.4	40	14	-20	9	44	1.64	+0.37	0.40	15.6	9	11	7	13	nw.	Frederick Ruermann.
Viroqua.	Vernon.	1,412	19	18.8	-2.1	42	27	-4	24	25	0.83	+0.74	0.40	10.5	7	13	7	11	nw.	Henry E. Rogers.
Vudese.	Vilas.	1,600	2	12.4	.....	33	14	-14	25	39	1.57	.....	0.40	16.4	12	6	10	15	w.	Louis L. Thomas.
Watertown.	Jefferson.	824	19	20.2	-1.0	40	27	-3	9	29	1.06	-0.77	0.40	10.5	7	12	6	13	nw.	Charles J. Salick.
Waukesha.	Waukesha.	964	14	20.5	-2.4	40	27	-3	9	29	0.84	-0.56	0.35	8.4	9	8	15	8	nw.	Carroll College.
Wausau.	Marathon.	1,212	17	16.3	-1.8	39	15	-11	9	40	0.98	-0.28	0.25	9.9	7	14	6	11	nw.	George H. Halder.
Weyerhaeuser.	Rusk.	1,297	3	15.0	.....	37														



TABLE 1.—Climatological data for December, 1910. District No. 5—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of overcast days.
Iowa—Continued.																				
Elma.	Howard.	15	18.2			48	14	13	24	31	0.53		0.27	7.3	4	17	8	6	nw.	H. A. Moore.
Estherville.	Emmet.	1,298	15	19.6	+ 1.4	50	14	10	24	47	0.10	0.52	0.10	1.0	1	20	0	11	n.	A. O. Peterson.
Fairfield.	Jefferson.	26	25.2	+ 0.1	50	14	1	13	32	0.55	1.23	0.37	0.9	5	18	2	11	nw.	R. Monroe McKenzie.	
Fayette.	Fayette.	1,003	20	19.4	+ 2.2	45	14	11	24	35	0.71	0.78	0.28	7.6	5	20	8	6	nw.	R. Z. Latimer.
Forest City.	Winnebago.	1,226	16	18.2	+ 1.6	49	15	11	24	44	0.45	0.40	0.40	2.5	3	17	6	8	w.	J. A. Peters.
Fort Dodge.	Webster.	1,126	10	22.2	+ 0.3	52	14	8	25	48	0.25	0.21	0.10	2.5	3	18	1	12	nw.	J. F. Monk.
Fort Madison.	Lee.	516	61								1.04	0.89	0.94	T.	2	15	2	14	s.	Miss L. A. McCready.
Gilman.	Marshall.	1,052	11																nw.	J. L. Wylie.
Grand Meadow.	Clayton.	1,180	19	19.2	+ 2.3	43	14	9	24	27	0.70	0.76	0.20	7.0	7	12	11	8	nw.	F. L. Williams.
Greene.	Butler.	12	20.6	+ 1.6	49	14	9	24	34	0.38	0.63	0.12	4.5	6	7	11	13	w.	J. L. Cole.	
Grinnell.	Poweshiek.	1,023	18	25.2	+ 0.8	53	14	6	24	35	0.24	0.93	0.20	2.4	3	16	9	6	w.	D. W. Brainard.
Grundy Center.	Grundy.	976	19	22.0	+ 0.6	53	14	9	24	39	0.56	0.62	0.20	5.6	5	18	0	13	nw.	J. B. Calderwood.
Guthrie Center.	Guthrie.	1,077	15	25.5	+ 1.7	49	14	4	24	34	0.13	0.97	0.13	2.0	1	19	2	10	nw.	D. G. Beardsley.
Hampton.	Franklin.	1,155	20	22.0	+ 0.5	50	14	9	24	35	0.41	0.84	0.15	4.2	5	12	13	6	nw.	E. C. Grenelle.
Humboldt.	Humboldt.	1,095	22	23.8	+ 0.5	51	14	11	24	39	0.26	0.43	0.16	1.0	2	15	7	9	nw.	Henry S. Wells.
Independence.	Buchanan.	921	46	21.2	+ 0.4	48	14	9	24	34	0.30	1.06	0.20	3.0	3	20	4	7	nw.	R. E. Dudley.
Indianola.	Warren.	960	19	26.4	+ 0.6	51	14	1	24	30	0.36	0.97	0.15	2.0	4				nw.	John L. Tilton.
Iowa City.	Johnson.	683	50	21.7	+ 2.5	53	14	7	24	54	0.46	1.19	0.20	3.0	4	19	0	12	nw.	Prof. A. G. Smith.
Iowa Falls.	Hardin.	1,170	17	19.7	+ 1.4	51	14	11	24	46	0.66	0.45	0.35	6.6	8	20	0	11	nw.	J. B. Parmelee.
Jefferson.	Greene.	11	24.8			54	14	1	12	37	0.22	0.53	0.22	2.7	1				nw.	M. E. Hall.
Keokuk.	Lee.	547	39	28.8	+ 0.6	49	14	4	24	29	0.79	1.08	0.66	0.1	5	19	6	6	nw.	U. S. Weather Bureau.
Keosauqua.	Van Buren.	644	18	24.4	+ 3.0	52	14	2	13	54	0.70	0.80	0.67	0.3	2	8	16	7	nw.	J. H. Landes.
Knoxville.	Marion.	920	15	27.0	+ 0.5	52	14	0	24	31	0.40	0.98	0.15	4.0	5	16	5	10	nw.	Casey & Belville.
Lacota.	Warren.	11				52	14	0	24	31	0.40	1.18	0.20	6.6	7	4	21	6	nw.	J. B. Alter.
Le Claire.	Scott.	576	10								0.93	0.19	0.46	4.9	6				nw.	Miss M. T. Disney.
Marshalltown.	Marshall.	947	18	22.6	+ 0.9	56	14	6	24	44	0.43	0.73	0.14	2.0	5	11	8	12	nw.	Ralph B. Reasoner.
Mason City.	Cerro Gordo.	1,132	13	19.9	+ 1.8	48	14	11	24	32	0.22	0.59	0.10	2.2	4	18	7	6	nw.	J. S. Mills.
Mount Pleasant.	Henry.	729	29	26.3	+ 0.5	49	14	1	24	29	1.06	0.31	0.80	1.0	4	17	9	5	nw.	J. W. Edwards.
Muscatine.	Muscatine.	50									0.96	1.32	0.44	1.2	5				nw.	William Molls.
New Hampton.	Chickasaw.	1,169	13	18.5	+ 1.0	46	14	11	24	29	0.40	0.53	0.20	3.5	3	21	2	8	nw.	A. F. Kemman.
Newtown.	Jasper.	944	22	25.2	+ 2.8	52	14	4	24	29	0.22	1.14	0.22	3.0	1	16	7	8	nw.	J. P. Beatty.
Northwood.	Worth.	1,222	14	20.0	+ 0.0	50	14	10	24	36	0.75	0.35	0.40	7.5	4	19	5	7	nw.	Chas. H. Dwellie.
Olin.	Jones.	760	12	23.6	+ 0.2	54	14	9	13	43	0.38	1.06	0.28	3.8	2	15	10	6	nw.	M. H. Crissman.
Osage.	Mitchell.	1,184	23	20.1	+ 0.5	49	14	11	24	32	0.50	0.85	0.25	4.7	2	18	2	11	nw.	A. D. Bundy.
Oskaloosa.	Mahaska.	843	34	25.6	+ 0.3	52	14	1	24	34	0.20	1.06	0.07	2.0	4	18	0	13	nw.	Joseph Boyd.
Ottumwa.	Wapello.	649	15	26.2	+ 1.6	50	14	0	24	34	0.47	0.84	0.31	1.0	5	12	10	9	nw.	Chester Potter.
Pella.	Marion.	877	8	26.0		54	14	1	13	37	0.16	0.08	0.45	4.5	4	22	0	9	nw.	John H. Ver Steeg.
Perry.	Dallas.	975	9	25.4		54	14	8	24	46	0.20	0.20	2.0	1	13	9	9	nw.	Ed. S. Gray.	
Plover.	Pocahontas.	1,426	14	20.8	+ 0.5	49	14	12	24	43	0.15	0.61	0.15	1.5	1	19	5	7	nw.	F. S. Smith.
Pocahontas.	do.	1,248	6	21.7		50	14	9	24	40	0.22	0.18	2.4	2	12	8	11	nw.	F. E. Hronek.	
Ridgeway.	Winnebago.	1,215	12	21.2	+ 1.1	49	14	9	24	31	0.71	1.53	0.40	4.7	7	16	8	7	nw.	Arthur Betts.
Rockwell City.	Calhoun.	14	22.9	+ 0.3	50	16	8	24	43	0.30	0.72	0.30	3.0	1	16	3	12	nw.	C. M. Randall.	
Sac City.	Sac.	1,278	34	22.8	+ 0.1	48	14	5	25	41	0.20	0.96	0.20	2.0	1	14	3	14	nw.	E. N. Baily.
St. Charles.	Madison.	1,070	9	27.1		53	14	1	24	37	0.27	0.12	2.8	5	14	10	7	nw.	R. D. Minard.	
St. Charles.	Keokuk.	877	14	25.5	+ 0.8	52	14	2	24	33	0.27	1.14	0.10	2.5	4	6	20	5	nw.	J. T. Parker.
Stockport.	Van Buren.	8	25.4		52	14	3	13	37	0.82	0.57	0.64	1.0	5	18	6	7	nw.	C. L. Bewick.	
Storm Lake.	Buena Vista.	1,440	21	21.7	+ 0.3	42	26	5	24	32	0.20	0.63	0.20	3.5	1				nw.	Prof. Warren Ingold.
Stuart.	Guthrie.	1,216	11																nw.	J. P. Fox.
Tipton.	Cedar.	807	11	24.6	+ 0.8	48	14	1	24	27	0.78	0.88	0.22	5.7	4	16	9	6	nw.	F. K. Gregg.
Toledo.	Tama.	836	16	23.0	+ 0.7	52	14	8	24	36	0.50	0.52	0.30	5.0	4	18	5	8	nw.	L. F. Giger.
Wapello.	Louis.	388	12	27.4	+ 0.5	49	13	3	12	32	0.52	0.79	0.52	T.	1	19	8	4	se.	G. W. Schofield.
Washington.	Washington.	769	28	24.8	+ 0.2	52	14	2	24	32		0.84							nw.	Wm. A. Cook.
Waterloo.	Black Hawk.	862	27	22.4	+ 0.4	54	14	8	24	38	0.47	0.17	4.9	4	16	9	6	nw.	M. L. Newton.	
Waukegan.	Dallas.	1,039	7	24.6		52	14	4	24	34	0.27	0.25	2.3	2	15	7	9	nw.	Samuel F. Folt.	
Waverly.	Bremser.	945	14	20.7	+ 0.9	52	14	10	24	40	0.34	0.84	0.14	5.5	3	19	2	10	nw.	Earl C. Moore.
Webster City.	Hamilton.	1,197	5	23.2		53	14	9	24	35	0.20	0.30	2.0	1	16	6	9	nw.	C. D. Carpenter.	
West Bend.	Palo Alto.	17	21.4	+ 0.8	49	14	12	24	32	0.36	0.53	0.30	3.6	4	13	7	11	nw.	Phil. Dorweiler.	
Whitten.	Hardin.	1,036	13	21.4	+ 0.2	52	14	9	24	40	0.10	1.02	0.10	1.0	1	16	9	6	nw.	F. P. Butler.
Winterset.	Madison.	1,129	19	25.6	+ 0.4	49	14	2	24	32	0.20	1.19	0.20	2.0	1	10	9	12	nw.	Robert S. Cooper.
Missouri.																				
Gorin.	Scotland.	700	24								0.82	1.25	0.79	T.	3	8	12	11	nw.	J. W. Pulliam.
Hannibal.	Marion.	534	18	29.1	+ 2.2	52	17	6	24	31	0.75	0.90	0.64	0.2	4	15	8	8	nw.	U. S. Weather Bureau.
Louisiana.	Pike.	500	32	28.6	+ 1.8	47	14	3	13	38	0.84	1.08	0.50	0.2	4	15	7	9	n.	J. T. Farrell.
Mexico.	Mexico.	797	32	28.0	+ 4.4	51	17	6	13	42	0.43	1.67	0.35	T.	6	19	1	11	nw.	J. F. Llewellyn.
Steffenville.	Lewis.	576	17	28.9	+ 0.6	49	17	2	13	34	0.90	0.87	0.85	T.	2	14	11	6	w.	Frank Hall.
Sublet.	Adair.	1,000	30	29.2	+ 0.6	51	15	0	12	36	0.50	1.20	0.50	T.	1	15	8	8	sw.	Lewis Spriggs.
Warrenton.	Warren.	865	20	28.9	+ 3.4	56	17	6	24	38	0.73	1.61	0.57	0.5	5	15	3	13	nw.	Dr. J. R. Frick.
Indiana.																				



TABLE 1.—Climatological data for December, 1910. District No. 5—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.				Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.			
Illinois—Continued.																					
Henry	Marshall	500	22	25.7	- 2.3	47	14	- 2	13	36	1.25	- 0.58	0.71	7.0	6	13	10	8	nw.	Dr. F. A. Powell.	
Hillsboro	Montgomery	675	16	29.8	- 1.9	52	17	8	13†	30	1.45	- 1.05	0.75	T.	4	17	0	14	nw.	Ira L. Woodward.	
Joliet	Will.	541	19	22.5	- 4.4	40	27	- 2	12	31	1.12	- 1.00	0.67	5.2	9	10	9	12	nw.	F. M. Muhlig.	
Kishwaukee	Winnebago	730	22	21.0	- 4.4	43	27	- 5	13	30	0.57	- 1.33	0.22	11.5	7	12	7	12	nw.	Geo. Stevens.	
La Grange	Cook	657	18	23.6	- 2.6	42	27	0	12	30	1.28	- 0.50	0.92	8.5	4	7	6	18	nw.	Prof. F. E. Sanford.	
La Harpe	Hancock	698	31	26.4	- 1.4	48	14†	- 2	13	36	0.82	- 1.49	0.60	0.9	4	21	4	6	nw.	Jno. S. Campbell.	
Lanark	Carroll	883	21	20.2	- 4.4	42	14	- 10	13	33	0.40	- 1.23	0.10	4.2	6	17	3	11	nw.	M. N. Wertz.	
La Salle	La Salle	536	33	24.2	- 3.3	45	14	0	12	30	1.11	- 1.17	0.52	7.3	8	10	9	12	w.	U. S. Weather Bureau.	
Lincoln	Logan	482	22	27.4	- 3.5	49	17	3	21	29	1.18	- 0.89	0.96	1.7	4	18	6	7	nw.	Prof. C. S. Ogilvie.	
Martinton	Iroquois	633	23	24.2	- 3.9	43	27	- 2	12	34†	1.16	- 1.27	0.90	4.0	7	8	7	16	sw.	Jos. H. Peltier.	
Mascoutah	St. Clair	425	20	31.3	- 2.8	55	17	10	13†	33	1.51	- 0.99	0.63	1.2	6	11	6	14	nw.	Geo. Henrich.	
Minook	Woodford	745	17	25.6	- 0.9	46	17	2	12†	32	1.16	- 0.57	0.57	5.5	6	12	11	8	nw.	O. M. Davison.	
Monmouth	Warren	784	18	25.8	- 1.1	49	14	10	24	30	1.13	- 0.44	0.72	1.7	6	15	13	3	nw.	Hugh R. Moffet.	
Morrison	Whiteside	685	16	22.7	- 1.6	44	16	- 6	12†	35	0.86	- 0.59	0.24	8.3	6	19	5	7	nw.	S. A. Maxwell.	
Morrisonville	Christian	638	11	28.4	- 1.5	51	17	5	21	30	1.49	- 0.59	1.13	0.2	4	17	5	9	nw.	J. D. Lewis.	
Mount Vernon	Jefferson	511	16	30.0	- 2.8	53	27	11	21	34	1.70	- 0.97	0.70	1.8	5	18	4	9	n.	Theo. P. Stelle.	
Oregon	Ogle	702	1	21.2		42	14†	- 4	24	29	1.40			0.60	14.0	5	12	3	16	w.	Samuel Ray.
Ottawa	La Salle	500	24	25.0	- 3.6	45	27	- 2	13	33	0.98	- 1.00	0.50	T.	5	8	0	23	nw.	Miss M. M. Harris.	
Pana	Christian	692	24	28.5	- 3.2	50	17	7	21†	26	1.05	- 1.02	0.70	T.	8	22	1	8	nw.	C. W. Sibley.	
Peoria	Peoria	609	33	25.4	- 2.7	48	14	3	24	31	1.25	- 1.12	0.85	1.6	8	11	11	9	nw.	U. S. Weather Bureau.	
Pontiac	Livingston	546	8	26.4		44	17	0	12	30	1.73		0.97	6.0	6	11	8	12	w.	Geo. Butterworth.	
Riley	McHenry	956	51	21.8	- 1.3	40	27	- 2	12	25	0.80	- 1.01	0.37	5.9	6	9	5	17	nw.	John West James.	
Rockford	Winnebago	763	18	21.4	- 5.7	41	14	- 1	24	36	0.60	- 1.33	0.19		9	14	5	12		Horner C. Porter.	
Rushville	Schuyler	670	19	28.0	- 3.0	51	17	5	24	31	1.16	- 0.57	1.02	T.	3	9	4	18	se.	H. F. Dyson.	
St. Charles	Kane	700	15	22.8	- 2.5	40	14†	- 2	25	28	1.01	- 1.00	0.37	11.5	6	11	7	13	nw.	Dr. Wm. H. Bishop.	
St. Peter	Fayette	500		29.0†		52	17†	6	21	30†	1.30		0.65	1.0	3	20	5	6	nw.	M. L. Lansford.	
Sparta	Randolph	538	24	31.6	- 3.8	54	28	11	13†	28	1.58	- 0.87	0.65	4.0	9	16	3	12	nw.	Jas. A. Caldwell.	
Springfield	Sangamon	644	33	28.4	- 2.9	50	17	8	24	26	0.86	- 1.57	0.70	0.2	6	13	8	10	nw.	U. S. Weather Bureau.	
Streator	La Salle	626	17	23.2	- 3.9	47	27	6	11†	36†	1.81	+ 0.03	0.80	6.5	6	4	5	22	sw.	Edw. F. Sweetser.	
Sullivan	Moultrie	530	10	27.6	- 2.0	48	17	6	21	30	1.39	- 0.83	0.91	1.0	4	13	8	10	nw.	C. A. Corbin.	
Sycamore	De Kalb	855	30	21.4	- 3.7	44	14	- 3	12	34	0.63	- 1.36	0.43	5.5	3	14	3	14	sw.	Miss E. J. Davis.	
Tiskilwa	Bureau	798	16																	F. I. Smucker.	
Walnut	do.	717	19	24.7	- 1.9	48	16	- 1	12†	31	1.16	- 0.42	0.56	5.9	6	13	9	9	s.	O. C. Nussle.	
White Hall	Greene	573	2	28.2		54	17	4	13	38	0.83		0.66	T.	4	18	4	9	w.	Dr. R. A. Pritchett.	
Windsor	Shelby	681	11	28.2	- 2.2	48	28	5	21	32	1.82	- 0.67	0.90	1.4	6	15	4	12	nw.	Herbert Rose.	
Winnebago	Winnebago	900	23	21.6	- 3.3	41	27	- 3	12†	30	0.91	- 0.94	0.25	12.0	6	15	5	11	nw.	Frank Osborn.	
Yorkville	Kendall	584	23	22.0	- 4.0	41	27	- 4	12	31	0.80	- 0.93	0.30	6.1	6	14	3	14	w.	Herman A. Grimwood.	
Zion	Carroll	938	16	21.2	- 3.2	43	14	- 5	13	37	1.30	- 0.21	0.40	13.0	5	22	2	7	w.	Robt. F. Gillogly.	

- \* b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.  
 \* Precipitation included in that of the next measurement.  
 \*\* Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.  
 † Also on other dates.  
 ‡ Separate dates of falls not recorded.  
 § Data are from standard instruments not supplied by the U. S. Weather Bureau.  
 ¶ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.  
 † Estimated by observer.  
 †† Precipitation for the 24 hours ending on the morning when it is measured.  
 ††† Precipitation is less than 0.01 inch rain or melted snow.



## MONTHLY WEATHER REVIEW.

DECEMBER, 1910

TABLE 2.—Daily precipitation for December, 1910. District No. 5, Upper Mississippi Valley.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
North Dakota.																																		
Amenia.	Red.				T.	T.	T.														T.					T.	T.		T.	T.	T.		T.	
Bottineau.	Mouse.				T.	.11	T.	T.		T.									.14					.04		T.	T.	.08	.06	T.	.02		.40	
Cando.	Sheyenne.					.14																											.16	
Crosby.	Mouse.				T.		.19																	.27	.11	T.	T.	.16		T.	.19	T.	.75	
Devils Lake.	Sheyenne.	T.	.01		T.	.20	.10		T.	T.	T.												.01	.11	.04	T.	T.	.13	.01				.61	
Donnybrook.	Mouse.																						.10	.15	T.					T.			.35	
Dunseith.	do.				T.	.19																		.20						.20	.10		.80	
Edmore.	Sheyenne.	T.				.10	T.																	T.					T.				.10	
Forman.	do.																						.25			.20			T.	.10	T.			.55
Grafton.	Red.																																	
Granville.	Mouse.				*	*	.12																	.01	.04	.01			*		.38	*		.6
Hannah.	Pembina.						.30																						.30		.10		.60	
Hansboro.	Red.						.28																						.04	.03			.38	
Hillsboro.	do.				T.		.20													.02				.02		.09		.05	.02				.40	
Lakota.	Sheyenne.																																	
Langdon.	Pembina.			T.	.17																											.19		0.67
Larimore.	Red.					.50	T.	.75												.11													1.85	
Leban.	Sheyenne.				T.	T.																		.10		.06					T.	T.		.35
McKinney.	Mouse.				T.		.16																											.80
Manfred.	Sheyenne.				T.	.20	.20																		.20					T.				
Mayville.	Red.																																	
Minot.	Mouse.				T.	.28	T.	T.																										
Minto.	Red.	T.	T.	T.	.28	T.	T.																											
Oriska.	Sheyenne.				T.	.16																												
Park River.	Red.			T.	.13	T.	.04			T.																								
Pembina.	do.			.05	.10																													
Power.	Sheyenne.				.05	.09																												
Pratt.	Mouse.																																	
Towner.	do.						.10																											
University.	Red.			.05	.02	.03	.05	.10																										
Wahpeton.	do.			.05			T.																											
Walhalla.	Pembina.	T.	.45	T.		.05																												
Westhope.	Mouse.				T.			.10		T.																								
Willow City.	do.	T.			T.		.10																											
Minnesota.																																		
Albert Lea.	Mississippi.				T.														.05						.10	.05		T.						
Alexandria[].	do.						.05	.03																										
Angus.	Red.	T.	.02			.12	.03																											
Bagley.	do.		.05			.04	.02																											
Baudette.	Rainy.																																	
Beardsley.	Minnesota.																																	
Beaulieu.	Red.																																	
Bird Island.	Minnesota.																																	
Caledonia[].	Mississippi.			.03	T.	T.			T.	T.		.07																						
Campbell[].	Red.																																	
Cass Lake[].	Mississippi.			.15	T.	T.		.05																										
Collegeville.	do.																																	
Crookston[].	Red.			.15		.05	T.	.05																										
Detroit[].	do.	T.	T.	T.	T.	T.	T.	.08			T.	T.	T.																					
Fairmont (near).	Minnesota.																																	
Faribault.	Mississippi.							.01																										
Farmington.	do.				T.																													
Fergus Falls.	Red.					.02	.02																											
Fort Ripley[].	Mississippi.			T.	T.	T.	T.	.02																							</			



TABLE 2.—Daily precipitation for December, 1910. District No. 5—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Minnesota—Continued.																																		
Winnibigoshish.	Mississippi.		.08	.22	.03	T.	.05	.03			T.								T.				.12	.02		.18			.16				0.91	
Winona.	do.			.04	T.		.01	T.			.08						T.	T.	.02				.05	.05		.18				T.		T.	0.43	
Worthington[]	Des Moines.																		T.				.10	.05		.07							0.05	
Zumbrota.	Mississippi.						T.	T.											T.				.10										0.17	
South Dakota.																																		
Milbank[]	Minnesota.																						.30						.10				0.40	
Wisconsin.																																		
Antigo.	Wisconsin.			.05	.02		T.	.10			.20	T.								T.			T.	.15		.30	T.	.17	T.				0.84	
Barron.	Chippewa.			.30							T.												.28			*	.17						0.75	
Beloit.	Rock.			.30						.20									.10				.10						.15				0.95	
Big St. Germain Dam.	Wisconsin.			.10	.04		.05		.09		.11	T.							.11				T.	.10	T.	.16	.03			.04	T.		0.83	
Brodhead.	Rock.		.15	.20				T.			.20								.05	T.			.08						T.				0.78	
Burnett.	do.			T.	.05	.04	T.		.03		.18								.02	T.			*	.05	T.	.10			T.				0.47	
Darlington.	do.																																	
Deerskin Dam.	Wisconsin.		T.	.07	T.	T.		T.	.08		.06	T.	T.						T.	T.	.07		T.	.15		.13	T.						T.	0.56
Delavan.	Rock.			T.	.09		T.			.13	.20								.06	T.			.02	T.	T.	.01		.05		.07	.01			0.39
Dodgeville[]	do.			.20	T.																			T.	T.	.14		.05						0.59
Downing.	Chippewa.			.40	T.		T.	T.			.05													.40	T.								1.20	
Eau Claire.	do.			.20	T.		T.		.08		.30												.14	.14	T.	.17				.06			1.90	
Grand Rapids[]	Wisconsin.			.06	.17			.28		.43																							1.30	
Grantsburg.	St. Croix.			.30	T.		T.	.20		T.													T.	T.	T.	T.	T.						0.80	
Hancock.	Wisconsin.		T.		.20	.10		.20		.30										T.		.20	T.										0.99	
Hatfield.	Black.			.20				.13		.22													.09	.13		.22							1.06	
Hayward.	St. Croix.			.40			.10				.20									T.				.30		.30							1.15	
Hillsboro.	Wisconsin.		T.	T.	.30	.10		.10			.20								T.	T.			.05	.10		.30							0.95	
Koepenick.	do.			.10					T.		.10	T.											.10	.10		.30		.05					1.70	
Lac du Flambeau.	Chippewa.		.20	.10							.30													.30		.40							0.67	
La Crosse.	Mississippi.			.15	T.		.01	.01		.05	.03								.01	T.				.02	T.	.30							0.55	
Lakemills.	Rock.			.10	.02	T.			.02		.15								.05	T.				.08	T.	.30							0.07	
Lancaster.	Mississippi.			.03															.02								.01	.01					0.68	
Long Lake.	Wisconsin.		T.	.04	.05		.02	.08	T.		.14	.02	T.			.02							T.	.09	.01	.13	.04			T.	.04	T.		0.56
Madison.	Rock.		T.	T.	.13	.01	T.			.13	.01								.02	T.				.05	.01	T.	.16							0.53
Mather[]	Wisconsin.																																	0.80
Mauston.	do.			.08							.20																.25							0.80
Meadow Valley.	do.		T.		.19	.02		T.	.05		.20																.22						10	0.51
Medford.	Black.			.20	.10						.20																							0.64
Merrill.	Wisconsin.			.15				.16			.14													.03	.10	T.	.12	.05			.03			0.36
Minocqua.	do.		T.	T.	.05		.04	.06			.13									.03	T.												0.95	
Mondovi.	Mississippi.			.03	T.			T.	.03		.03													.07	.08		.32		.04	.02			0.29	0.01
Mount Horeb.	Rock.		T.	T.	.12	T.	T.				.22												.10										1.29	
Muscoda[]	Wisconsin.			.30							.25																							0.65
Neillsville.	Black.			.10				.05			.05																						1.21	
New Richmond.	St. Croix.			.20	T.	T.	T.	T.																									0.39	
Oscoda[]	do.			.02	T.																												0.13	
Park Falls.	Chippewa.			.04			T.	T.			.02																							0.33
Portage.	Wisconsin.			.10							.08																							0.52
Prairie du Chien[]	Mississippi.			.02		T.					.08																							0.45
Prentice.	Chippewa.																																	0.46
Rhineland.	Wisconsin.		T.		.04			.09			.13	T.	T.											.03				.08	.04					0.55
Sauk City.	do.			.20																														0.45
Shullsburg.	Mississippi.			.06							.18																							0.46
Solon Springs.	St. Croix.			.30			.10																											0.85
Spooner.	do.			.32	T.			.08			T.																							0.78
Stanley.	Chippewa.			.25	.03			T.	.08		.12																							1.50
Stevens Point.	Wisconsin.		.10		.10			.20			.40	T.	.08																					0.54
Sugar Camp Dam.	do.		T.	.03	.04			.05	.07		.08			.08																			0.60	
Twin Lakes Dam.	do.			T.	T.	T.	T.	.07	.04		.14	T.																					1.64	
Valley Junction.																																		







TABLE 2.—Daily precipitation for December, 1910. District No. 5—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
<i>Illinois—Continued.</i>																																	
Monmouth.....	Mississippi.....			.04							.04									.03			.23						.72	.07			1.13
Morrison.....	do.....	T.		.15							.20								.00			.15				.03			.24	T.			0.86
Morrisonville.....	Illinois.....	T.																				.12	T.	T.				1.13	.22	.02		1.49	
Mount Vernon  .....	Mississippi.....					.06	.08																.31						.70	.55			1.70
Oregon.....	do.....			.40							.20								.05			.15							.60	T.			1.40
Ottawa.....	Illinois.....			T.						T.	.20								.00			.00							.50	.10			0.98
Pana.....	Mississippi.....																					.03	.03						.70	.25	.04		1.05
Peoria.....	Illinois.....	T.		.06		T.	T.	T.			.02								.01			.20	T.						.49	.36	.10	.01	1.23
Pontiac.....	do.....	T.		.20							.30								.10	T.		.05	T.	T.					.97	.11			1.73
Riley.....	Mississippi.....			.07				T.			.20								.06	T.		.05	T.			.05			.37				0.80
Rockford  .....	do.....	T.	T.	.05			T.	T.	T.		.18								.03	.01			.04	.01	.05				.19		.02		0.60
Rushville.....	Illinois.....					T.				T.		T.							T.				.08	T.	T.		1.02		.37	.06			0.16
St. Charles.....	do.....	T.	T.	.08		T.	T.	T.			.30								.07	T.			.12	T.	T.	.07	T.		.37	T.			1.01
St. Peter.....	Mississippi.....	T.																				T.						T.	.55	.65	.10		1.30
Sparta.....	do.....	T.				.20	.08				.03											.08	.04					.05	.42	.65	.03		1.58
Springfield.....	Illinois.....	T.		.01		T.	T.			T.	T.												.04	T.					.50	.20	.07	.04	0.86
Streator  .....	do.....		.03	T.	.12						.18									.08									.80	.60			1.51
Sullivan.....	Mississippi.....	T.		.10																							T.	.91	.33				1.30
Sycamore  .....	do.....	T.		T.	.06						.12																		.45				0.63
Walnut.....	do.....	T.		.16		T.					.22								.05				.12						.56	.05			1.16
Warsaw  .....	do.....									.01									.01					.02	.01				.75		.01		0.81
White Hall.....	Illinois.....					T.	T.				T.												.04	T.				.08	.66	.05	T.		0.83
Windsor.....	Mississippi.....	T.		.10																T.	T.		.20	.25	T.		T.	.90	.35	.02		1.82	
Winnebago.....	do.....			.20							.20								.06				.15			.05			.25	T.			0.91
Yorkville.....	Illinois.....	T.		.20		T.	T.	T.			.22								.02				.03						.30	.03			0.30
Zion.....	Mississippi.....	T.		.40						.40									.20				.10	T.				.20					1.30



TABLE 3.—Maximum and minimum temperatures at selected stations, December, 1910. District No. 5, Upper Mississippi Valley.

Date.	North Dakota.										Minnesota.																	
	Bottineau.		Devils Lake.		Lisbon.		Minot.		Pembina.		Collegeville.		Crookston.		Grand Meadow.		Montevideo.		Moorhead.		New Ulm.		Pine River Dam.		St. Paul.		Winnipeg.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	18	-12	16	-9	24	2	19	-7	18	-10	23	5	15	-3	22	5	21	0	15	-2	23	3	13	1	25	7	13	0
2....	21	-8	23	16	25	-2	28	2	22	12	25	9	24	5	27	6	28	12	26	12	27	3	20	-1	25	9	17	3
3....	12	1	17	8	30	-2	15	4	18	12	26	20	20	15	30	17	29	15	23	10	30	12	24	17	28	23	24	14
4....	12	-2	12	4	24	6	16	0	12	8	27	17	20	2	27	18	25	14	21	10	29	16	25	13	28	22	29	6
5....	10	6	15	-18	27	18	11	10	8	0	29	19	20	12	29	14	28	20	22	-5	26	7	25	13	27	21	24	6
6....	3	-28	8	-18	19	-14	15	-21	0	-8	24	-1	8	-13	22	10	23	-5	11	-12	23	3	22	-2	25	11	14	-3
7....	-4	-16	0	-15	21	-6	15	-8	-8	-18	24	-1	3	-12	19	8	15	-3	6	-10	16	1	8	-6	18	7	6	-11
8....	19	-21	13	-13	24	2	26	-9	-2	-10	18	-2	12	-14	24	0	21	-2	6	-10	21	0	5	-27	13	2	4	-21
9....	27	-20	34	-12	18	4	24	4	-8	-20	26	1	26	-8	28	7	30	10	30	6	29	0	19	-10	25	0	19	-8
10....	8	7	23	-8	23	-1	16	8	-4	-10	20	15	20	12	32	16	22	21	28	0	24	18	24	7	30	11	24	1
11....	4	-12	-1	-16	27	-1	13	-14	-8	-12	19	0	-3	-7	21	2	9	-2	1	-12	21	0	17	0	17	4	10	-2
12....	29	-16	36	-16	28	5	35	-14	16	-20	19	-8	15	-18	22	-7	23	-10	18	-16	16	-6	17	-19	17	-3	12	-17
13....	29	1	36	16	24	7	38	11	30	5	41	12	30	-10	39	5	45	9	40	12	45	-7	31	5	43	8	35	-1
14....	34	8	31	23	30	4	40	26	22	12	43	27	32	12	50	22	45	25	36	18	50	16	37	16	44	27	34	17
15....	23	11	25	14	18	-1	30	8	26	10	38	18	22	13	38	19	29	22	25	17	32	21	29	11	31	20	29	8
16....	20	15	23	17	20	-4	21	9	30	8	30	17	26	14	40	17	28	24	26	21	27	21	23	12	33	19	26	9
17....	28	12	30	17	24	-6	34	4	18	12	32	24	32	21	39	15	34	23	33	23	29	16	24	0	32	19	23	2
18....	26	10	28	21	26	2	31	21	12	8	31	17	32	23	31	19	34	19	34	23	31	17	30	20	34	24	30	20
19....	20	8	23	10	29	8	31	20	-2	-10	22	8	17	14	29	18	25	24	24	15	24	19	26	11	28	13	24	8
20....	28	9	27	14	32	10	38	8	-5	-16	38	13	23	7	22	4	20	10	20	10	21	9	16	-4	20	6	14	-6
21....	31	10	40	24	26	12	40	21	18	-8	37	25	30	9	32	4	44	15	33	15	40	10	35	3	36	9	33	0
22....	22	15	29	4	24	-2	26	19	22	0	28	2	30	20	29	20	33	20	34	10	23	16	32	25	30	26	35	24
23....	2	-16	5	-7	18	-4	8	-8	30	2	12	-10	0	-2	28	2	5	3	10	-10	16	6	26	2	27	-1	24	-7
24....	8	-12	7	-11	18	-16	17	-9	28	-5	20	3	11	-20	9	-11	15	-11	10	-18	17	-8	8	-23	8	-8	2	-25
25....	20	-8	17	0	21	-15	29	-3	30	-2	32	8	14	-15	25	2	25	5	16	1	21	-9	16	-1	21	-8	14	-5
26....	28	-5	32	8	40	-2	35	5	32	-5	34	20	30	-2	27	5	26	5	32	0	41	5	21	-6	27	7	23	-2
27....	14	-6	16	3	23	8	19	-3	30	8	28	18	18	4	35	11	28	10	32	7	40	8	21	15	28	18	28	11
28....	10	-3	9	-4	28	8	13	3	8	-8	30	3	17	-3	27	15	28	20	22	-3	16	16	22	12	26	22	23	9
29....	8	-4	7	-20	23	-6	7	1	-8	-10	15	-10	1	-5	29	3	14	-4	4	-15	11	1	20	-3	24	4	20	-2
30....	10	-20	5	-20	28	-15	23	-11	-2	-34	30	14	12	-24	21	-10	37	0	30	-15	21	1	6	-24	29	-3	7	-34
31....	-6	-15	17	-19	.....	-7	7	-10	-5	-5	30	11	10	-12	29	18	26	20	15	-12	42	5	23	2	36	16	22	6
Mns...	16.4	-3.6	19.1	0.5	24.4	-0.3	22.9	2.3	12.5	-4.5	27.7	9.5	18.3	0.7	28.5	8.8	26.4	10.0	21.4	2.2	26.8	7.1	21.5	1.8	26.9	11.2	30.7	6.0

Date.	Wisconsin.										Iowa.																	
	Delavan.		Eau Claire.		La Crosse.		Madison.		Mantion.		Spooner.		Watson.		Algona.		Cedar Rapids.		Charles City.		Davenport.		Des Moines.		Dubuque.		Keokuk.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	22	16	22	11	23	14	23	18	20	16	20	6	33	11	24	4	28	12	25	7	27	16	29	9	26	16	30	12
2....	28	20	22	10	24	16	24	20	24	16	21	5	24	18	30	11	27	11	27	8	29	13	30	11	26	15	32	12
3....	27	14	26	19	29	22	27	19	28	15	26	18	25	18	28	15	32	12	34	18	35	25	35	23	31	22	42	28
4....	31	15	28	20	27	22	27	21	26	17	26	11	27	17	25	15	29	24	28	18	29	21	30	17	29	19	30	23
5....	28	20	26	10	25	12	25	20	24	16	24	-5	28	-4	27	24	32	24	28	13	32	21	33	26	28	20	32	26
6....	28	12	23	2	24	7	25	14	25	2	18	9	23	-3	-25	12	26	11	22	7	29	17	28	22	30	14	32	15
7....	28	12	19	5	23	8	23	10	22	10	13	0	32	12	27	4	22	11	19	5	26	17	27	14	25	14	30	20
8....	20	3	11	-8	17	-2	14	6	15	-7	7	-14	18	-6	24	4	26	10	25	1	28	12	26	9	24	10	33	11
9....	27	-6	17	-13	23	-3	23	3	20	-11	17	-14	17	-11	26	13	30	9	26	6	32	14	30	20	25	8	38	18
10....	27	-21	27	14	29	18	20	22	28	11	33	-9	37	15	32	15	32	15	32	10	33	26	42	17	33	25	41	21
11....	23	-4	27	2	18	4	22	5	27	5	12	0	24	-2	26	3	17	12	21	5	26	9	29	15	25	11	33	20
12....	20	-1	13	-2	17	1	18	3	20	-4	13	-3	25	-6	20	-5	17	1	22	-3	17	2	22	6	20	4	24	8
13....	27	-6	33	-5	32	0	25	6	28	-6	34	2	29	-3	42	8	31	2	33	0	31	6	36	7	28	0	37	8
14....	37	19	41	24	46	27	40	23	40	25	38	12	38	23	51	23	50	2	50	23	48	23	53	28	46	25	49	24
15....	38	21	35	18	31	24	38	21	40	22	32	12	39	15	40	22	35	25	34	21	38	26	39	27	30	24	41	29
16....	27	12	23	16	32	21	28	17	26	15	25	11	32	-8	32	25	40	21	40	19	41	22	45	20	38	23	47	19
17....	37	21	32	12	36	19	35	20	35	8	32	11	33	10	29	21	38	22	38	16	46	28	33	19	39	25	40	30
18....	34	27	34	10																								



DECEMBER, 1910.

## MONTHLY WEATHER REVIEW.

1833

TABLE 3.—Maximum and minimum temperatures at selected stations, December, 1910. District No. 5—Continued.

Date.	Illinois.																			
	Hannibal, Mo.		Laporte, Ind.		Cairo.		Greenville.		La Salle.		Monmouth.		Mt. Vernon. #		Peoria.		Springfield.		Winnebago.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	30	13	32	23	28	21	25	18	27	20	27	14	25	18	24	18	24	18	25	18
2.....	34	15	30	20	35	21	32	14	25	20	29	11	30	15	31	16	30	17	24	17
3.....	46	25	28	15	43	28	39	25	33	23	36	19	35	20	34	18	39	26	29	19
4.....	32	20	30	17	38	30	29	20	30	21	30	20	44	25	33	16	29	20	30	11
5.....	32	24	25	15	33	29	32	27	31	23	32	23	34	30	31	24	33	27	29	22
6.....	30	17	26	12	29	21	32	26	27	19	29	18	30	22	27	18	29	21	25	15
7.....	34	15			37	18	37	18	26	15	29	19	33	16	30	14	33	21	24	14
8.....	37	11			39	24	35	16	26	11	31	8	40	14	31	9	34	17	19	3
9.....	41	14			45	24	41	21	32	14	33	14	40	17	35	18	39	20	25	0
10.....	44	22	32	20	50	38	41	27	31	22	37	23	43	21	38	23	40	36	30	24
11.....	35	22	30	14	43	33	38	23	22	5	30	16	33	20	27	13	34	19	26	6
12.....	26	10	30	12	35	22	27	11	18	0	22	4	20	15	24	6	24	11	17	3
13.....	36	7	31	7	36	19	35	13	31	1	33	3	38	12	32	5	34	13	25	1
14.....	49	20	39	18	44	21	43	19	45	21	49	21	43	16	48	17	45	19	40	19
15.....	43	21	37	26	47	34	44	27	36	22	40	28	44	21	40	18	42	28	38	22
16.....	47	16	31	12	45	28	41	21	38	21	41	15	47	23	40	17	40	20	35	19
17.....	52	26	29	7	52	31	50	24	42	25	48	23	52	20	47	27	50	27	38	22
18.....	45	28	32	20	56	39	41	26	35	28	36	26	50	26	33	25	36	25	33	22
19.....	44	30	31	25	52	36	46	26	33	17	35	29	48	28	38	24	43	28	30	20
20.....	31	16	26	18	36	27	32	14	19	10	29	11	30	21	24	10	28	17	20	7
21.....	38	11	23	8	37	22	33	16	30	7	34	6	45	11	31	4	33	14	25	1
22.....	42	34	36	6	41	34	36	27	36	22	35	23	37	20	36	27	36	29	35	16
23.....	36	11	34	25	41	31	36	18	36	10	37	15	31	31	36	12	37	13	32	20
24.....	24	6	25	5	31	18	25	10	12	3	16	1	40	13	18	3	21	8	29	3
25.....	44	19	25	5	45	24	40	17	34	7	37	8	44	16	36	11	38	14	30	0
26.....	44	24	40	25	48	35	40	28	36	25	40	24	43	31	39	24	41	27	32	20
27.....	42	25	39	29	59	32	46	24	42	28	47	24	53	22	41	23	41	26	41	20
28.....	41	36	38	30	61	44	49	35	37	33	37	32	50	21	36	33	42	35	37	29
29.....	37	22	34	32	44	31	40	18	35	19	35	22	40	36	35	19	36	22	33	27
30.....	37	16	34	28	38	25	36	18	29	13	32	11	35	30	30	13	32	18	27	1
31.....	46	28	37	10	44	31	41	24	40	27	40	24	45	19	41	26	42	28	36	17
Means.....	38.7	19.5	31.6	17.3	42.3	28.1	37.5	21.0	31.4	17.1	34.4	17.3	39.4	20.6	33.7	17.1	35.6	21.1	29.4	13.7



**Climatological Data for December, 1910.  
DISTRICT No. 6, MISSOURI VALLEY.**

MONTROSE W. HAYES, District Editor.

**GENERAL SUMMARY.**

In the lower part of the drainage area, or below Omaha, the weather was dry and cold. In the remainder of the district it was generally warmer than in the average December, and the precipitation was irregularly distributed, but was not very much above or below the normal in any areas that were of any great extent. Upon the whole the conditions were quite favorable for outdoor work. Cattle were able to graze through most of the month, effecting a saving in forage and grain. On most of the government irrigation projects work progressed to a greater extent than is usual in December.

**TEMPERATURE.**

There was a marked absence of well-defined warm or cold periods. Each of the subdivisions of the drainage area had moderately high temperatures, but they occurred at times that differed widely, as the warm weather areas were quite limited in extent. The highest temperature was 74° at Farnsworth, Kans., on the 9th. The lowest temperatures at the various stations were not unusual. At some point in each of the States in the drainage area the temperature fell to zero or lower, but there were no especially low readings recorded. The lowest of record was 32° below zero at Marstonmoor, N. Dak., on the 6th. In the eastern portion of Nebraska and Kansas, in western Iowa, and in Missouri the average daily deficiency ranged from 0.1° to 3.9°. In the remainder of the district there was an excess that was most marked in the foothills of the Rocky Mountains, where, in several localities, it amounted to more than 5° per day.

**PRECIPITATION.**

The period of most general precipitation comprised the 3d, 4th, and 5th. In Colorado and western Nebraska the 10th, 11th, and 12th were rainy or snowy, but in the other portions of the district there was comparatively little precipitation between the 6th and the 19th. After the 19th the weather was rather unsettled and light rains or snows occurred frequently. There was a general deficiency in the Dakotas, eastern Nebraska, northern Kansas, and in those portions of Iowa and Missouri drained by the Missouri River, the deficiency being most marked in the two last-named districts. In the remainder of the drainage area the precipitation was unevenly distributed, and none of the subdrainage areas had either general excesses or deficiencies. The high mountain country, however, is an exception, as there the December snowfall, and there was very little rain, was deficient.

**MOUNTAIN SNOWFALL.**

*Montana.*—The autumn conditions were favorable for the natural storage of moisture. Over most of the mountain districts the precipitation was above the normal in September and October, and nearly all that occurred was absorbed by the soil, which was exceedingly dry on account of the long continued drought. During the latter part of November heavy snows fell in the mountains and by the close of the month from 2 to 5 feet had accumulated at high elevations. The temperatures were almost continuously below freezing during December, and the snow at the close of the month was quite solid and compact. The December snowfall was deficient in most sections, but as little of the earlier fall had melted the accumulated amount at the close of the year compared favorably with the average. However, the soil was unusually dry, notwithstanding the rains referred to above, and this

fact must be given due weight in estimating the water supply for the coming season.

*South Dakota.*—Considerably less than the usual amount of snow fell in the Black Hills during December; as very little of the November fall remained at the beginning of the month the year closed with less than the normal amount on the ground.

*Wyoming.*—Both in November and December there was less snow than normally falls during those months. However, the amount remaining on the ground at the end of December was quite compact.

*Colorado.*—The season's snowfall up to December 31 was much less than for the corresponding period last year and as a whole considerably less than the normal. In a few localities approximately the average amount occurred, but the areas so favored are too small to make up for the general and marked deficiency in the water stored for late irrigation. The snow is generally unpacked, and there has been little drifting.

**RIVERS.**

Low stages continued throughout the month. At Hermann, Mo., on the Missouri River, 103 miles from its mouth, the lowest was 1.7 feet; this stage prevailed from the 18th to the 23d, inclusive. On December 21 and 22, 1878, the river at Hermann fell to a reading of 0.0, the lowest of record. At St. Louis the Mississippi River fell to -1.4 on the 17th, and established a new December record for low water; previously the low water record for the last month of the year was -1.3, in 1901. The Mississippi above the mouth of the Missouri was low also. At Hannibal, 113 miles above the confluence of the Mississippi and Missouri, the lowest stage since 1864 was -1.9 on December 4, 1893; on December 14, 1910, a stage of -1.8 was reached.

**ARE THE SPRINGS COLDER NOW?**

A paper on "Late spring frosts in relation to the fruit crop of Missouri."

(Read by GEORGE REEDER, Section Director, Weather Bureau, before the Fifty-third Annual Meeting of the Missouri State Horticultural Society, University of Missouri, Columbia, Mo., January 10-13, 1911.)

The frequent and heavy losses suffered by Missouri fruit growers from late spring frosts during the last 10 years have created some alarm among orchardists and have caused a few to question the policy of attempting the raising of fruit in this State on an extensive commercial scale. It is asserted by many that the climate of Missouri has changed; that our winters are milder and our springs are colder than formerly.

**OPINION WIDESPREAD.**

The assertion that our climate has changed, and for the worse, is not confined to Missouri alone by any means. Indeed, east of the Rocky Mountains the opinion that the climate is undergoing an appreciable change is general, especially among the agriculturists. The man who is the closest to nature always has been quick to note weather changes, and while many of his sayings and signs are not worthy perhaps to be handed down from father to son, still there are a few not to be altogether despised or thrown aside.

It is of course not an easy matter to compare the losses in fruit culture of 20 or 30 years ago with those occurring to the industry as carried on to-day. During the first decade of the 30 years ending with the spring of 1910, there were few, if any, so-called commercial orchards in Missouri. While every farmer possessed an orchard for home use, they were as a rule composed of many varieties of trees that blossomed at different times. It was no doubt a rare occurrence indeed,



owing largely to this difference in the blossoming time, when there was not sufficient fruit from some variety for home consumption. On the other hand, in the present day of the large commercial orchards, the varieties maintained in any one orchard may be counted on the fingers of one hand, and consequently the almost total destruction of fruit from late spring frosts has become more frequent.

#### THE SPRINGS APPEAR TO BE COLDER NOW.

Notwithstanding the supposition that orchards may be more liable to injury from late spring frost at the present time because in many cases almost the entire orchard blossoms at the same time, or to the improved strain of fruit now grown (the latter statement is much in doubt, many authorities claiming that improved fruit is not more sensitive to cold than the varieties grown 30 years ago), the fact remains that the springs of the last 10 years, and particularly the last 5 years averaged colder than those of the preceding 10 or 15 years, and this statement is well supported by climatological data, presented here, possibly for the first time, in apparent substantiation of the popular idea that "our climate has changed." I would, however, earnestly caution the reader not to be too hasty in the conclusion from data here presented that the climate of Missouri is undergoing a permanent change. Meteorologists of the world generally agree, and the world's climatological records show, that climate is practically unchangeable; that is to say, permanent climatic changes are noticeable, probably, only in geological units of time. On the other hand, the records also indicate that while weather may change from day to day or from hour to hour, there are certain changes that move in cycles or oscillations, having uncertain units of time. The cause of these cycles or oscillations is not definitely known, but it has been pointed out by one or two authorities that the wet and cool periods and the dry and warm periods on the earth appear to correspond somewhat with the periods of maximum and minimum sun spots, which in turn are thought to be due to changes in the sun's photosphere. A few students of the subject claim that these weather changes go in cycles of 3 years, then a longer one of about 9 or 11 years, and still a greater cycle of 30 to 35 years, the last being more clearly pronounced; but no general agreement has yet been reached regarding them.

#### DAILY MINIMUM TEMPERATURE IMPORTANT FACTOR.

Studies of the mean daily, mean monthly, and mean annual temperatures, while important in themselves, give us a nearly unchangeable factor, and one not particularly interesting or striking in its features. For instance, the variations in the mean annual temperature of Missouri, covering a period of 25 years or more, rarely exceed  $3^{\circ}$  and are often less than  $1^{\circ}$ . It matters not what the extremes may have been during the 4 seasons, or 12 months, at the close of each 365 days the final value is practically the same year after year. Another example in which the mean temperature gives but little satisfaction as to the variations in the weather that have taken place during a certain period is that for April, 1910, which, for the State of Missouri, differed from its 20-year normal by only  $0.3^{\circ}$ . Yet the frosts of that month were the most destructive from the viewpoint of the agriculturist and horticulturist, and the weather generally was the most disagreeable from the physiological side that has occurred during, possibly, the past 30 years.

The factor that is the most important, in my opinion, is the daily minimum temperature, which is as a rule nothing more than the lowest night temperature. The night temperatures explain the interesting cause why the crops do not grow and why the season is delayed. The days may be warm and bright, but vegetation as a rule will not flourish as long as the nights continue abnormally cold.

The present paper presents graphically in figure 1 the average daily minimum temperature, by decades, recorded during April and May, at Columbia, Boone County, Mo., during the 20 years 1891 to 1910, and in figure 2 the last date on which a temperature of  $32^{\circ}$  F. occurred during the 30 years 1881 to 1910, at Mexico, Audrain County, and the 20 years 1891 to 1910, at Columbia. Tables numbered I and II are also presented, showing daily minimum temperatures of Columbia for the two mentioned spring months, and also Tables III and IV, which give the dates of the last killing frost ( $32^{\circ}$  F.) at both places for the entire period under discussion.

The data for Columbia have been used for the reason that at this station self-recording instruments have been in use continuously during the entire 20 years, covering a longer continuous period with self-recording thermometers than any other station in the State outside of the larger cities. Its situation is at a moderate elevation (738 feet above mean sea level) and near the center of the State. It is remarkably free from local temperature control, and the climatic values also closely agree with the average values for the entire State. While the length of time covered by the tables is not sufficient to justify exact conclusions in regard to temperature oscillations, it is sufficient for a comparison of two 10-year periods. The data for the first 11 years at Mexico Mo., in figure 2, were taken from the dry-bulb thermometer readings at or near 7 a. m., supported by annotations on killing frosts, ice, etc., made at the time by the observer; they are, therefore, perhaps not strictly comparable with the last 19 years which were obtained from self-recording instruments.

It requires but a casual inspection of figure 1 to note that the mean minimum temperature at Columbia, Mo., during the last 10 years, indicated by the broken line marked "B," is lower than the preceding 10 years as shown by the solid line marked "A." Particularly is the difference noticeable from April 12 to May 10—the period when fruit is in its most critical stage. Now, if we refer to Table I, we shall find that for April the 10-year averages are as follows:

1891-1900.....	45.0
1901-1910.....	42.0

which shows second decade to be  $3^{\circ}$  colder than the first. In Table II for May the averages are:

1891-1900.....	53.0
1901-1910.....	53.0

showing no difference for the whole month; but if we take the first 15 days of May of the first 10 years and compare them with the first 15 days of the last 10 years, we find that the latter period was  $2.6^{\circ}$  colder than the first, as shown in the following table:

First 15 days of May, 1891-1900.....	51.9
First 15 days of May, 1901-1910.....	49.3

For further comparison other near-by stations having records from self-registering instruments for nearly the entire periods under discussion are entered here, the mean monthly minimum temperature being given:

	April.	May.
Mexico:		
1891-1900.....	43.9	53.6
1901-1910.....	40.2	51.7
Fayette:		
1891-1900.....	45.6	54.3
1901-1910 (May, 1907, out).....	41.5	52.4
Harrisonville (in western part of State):		
1891-1900.....	43.6	53.5
1901-1910.....	40.6	52.4

This comparison shows that the month of April during the last 10 years averaged  $3.6^{\circ}$  colder than the preceding 10 years, and that May was  $1.7^{\circ}$  colder during the last decade.



A closer inspection of Table II will show the interesting fact that during the first 10 years the temperatures during the first 15 days of May registered in the thirties 10 times, reaching 32° once, and during the last 15 days they were in the thirties 9 times. During the first 15 days of the last 10 years the number had increased to 18, reaching 32° or lower 5 times; during the last 15 days of the last 10 years, however, the temperatures were in the thirties but once.

We shall find that there is a close agreement between the tables and curves. For instance, an examination of figure 1 will disclose the fact that during the period from 1891 to 1900 danger from frost was practically over by the 15th of April, but during the last decade the probability of damaging frosts had been extended into May.

Now, along with figure 1 let us inspect figure 2. From this chart we find that during the period represented by the years 1881-1890 at Mexico there was but one killing frost after the 20th of April; during the following 10 years there were three, one occurring in May; and during the last 10 years, bringing us down to the spring of 1910, there were 9, 5 of which occurred in May. We may disregard the record of the period from 1881 to 1890 as the data are based upon eye observations and dry thermometer records, but the data for the 20 years beginning with 1891 at Mexico agree with similar data recorded at Columbia during the same period. Beginning with 1896 the record shows a peculiar oscillation of the frost isochronals; the advances and retreats are interesting from the view that each advance was greater than the retreat until the line of April 30 was crossed; the two following years the forces were very nearly equal, but in 1906 King Frost was again successful, crossing into May, where he maintained his forces, though apparently strictly on the defensive, for 4 successive years, a phenomenon unparalleled by previous records in this State covering 3 decades. It will be noticed that after 1906 the retreats are greater than the advances, the last retreat, as shown in the spring of 1910, it is to be hoped—especially from the horticulturist's point of view—may turn into a complete rout.

#### CHANGES IN THE EARTH'S CLIMATE.

While there is abundant evidence in the records of geology to prove that great changes took place in the earth's climate during prehistoric ages, the world's leading meteorological authorities generally concur in the opinion that there have been no appreciable climatic changes during the period covered by authentic history. The popular idea that the climate is changing is evidently an old one, and is caused by the temperature and precipitation conditions remaining for comparatively short periods below or above the normal conditions; such changes should be referred to as oscillations in the weather rather than as changes in the climate.

#### CONCLUSION.

It appears from climatological data of the Columbia station and a few others given here that the springs of the past 10 years experienced quite marked temperature departures from the normal. The most interesting as well as the most important question to be answered is how long will the cold period last? Unfortunately our climatological data do not cover a sufficient length of time to enable us to work out the number of years to each cycle. While the records show periods of both mild and cold springs for the 30 years, the change during the last 20 years from mild springs to unusually cold springs is not only of marked interest to the climatologist, but bears rather more serious import to the orchardists, whose earnings have been affected, and who are of course interested in the question of whether mild springs will ever come again.

As we are unable to answer this question positively, and as it is rather more pleasant to be optimistic than pessimistic,

we will look to the future springs from the brighter side. It is quite evident that freezing temperatures in May are abnormal for Missouri, especially most of that part south of latitude 39° 40' N. The frost isochronals of the last 4 years, while unusually late, rather indicate a return to more normal conditions. While it is possible of course the next 10 years may furnish several Mays in which freezing temperatures will occur, the probabilities are that the tendency will be more and more toward the conditions that prevailed from 1894 to 1902, inclusive, which from the record appear to have been highly favorable to the fruit man. Possibly by the close of the decade ending with 1930 the average date of the last killing frost in spring will have receded to where it was, as claimed by the "old timers," in the eighties—along about April 12.

Doubtless at that period the youth of to-day, then a man of middle age, will be declaiming to all who will listen that "our climate has changed; the springs were colder when I was a boy." "Why," he will continue, "the springs were so cold we had to use mechanical heaters in the orchards during those days to get any fruit at all." And to prove what he says he will point to the old heaters rusting away in the barn.

And thus the pendulum may swing the other way, and again later on swing back to where we are to-day, continuing to swing back and forth for stated periods for centuries to come. Such are the so-called cycles or oscillations of the weather.

While the hoped-for period of mild springs may return during the next 10 years, nevertheless we should be prepared to combat, whenever necessary, the late spring frost with scientific methods. Every fruit grower on a large scale should equip himself with the necessary heaters and a few good thermometers. It has been demonstrated in Colorado and Kansas that 70 to 80 heating pots to the acre (and I would not recommend less) are sufficient to save a fruit crop when the temperature outside the protected area falls to 25° and even as low as 22°. Perhaps some of you have followed such methods in Missouri.

The pots should hold about 3 quarts of fuel oil, and, in the majority of cases, it will not be necessary to light them until about 2 a. m. or later. The oil is not costly, and it seems to me that the little extra cost and labor are small items when compared with the damage one frosty night will do to an orchard when no effort is made to save it, and what the loss or saving of that crop means to the owner.

Where there are telegraph facilities, and if the funds on hand permit, timely warnings will be sent by the Weather Bureau. There are many places that can not be reached by telegraph, but nearly all towns and in fact many homes have the telephone installed. The Bell, Kinloch, and the Missouri and Kansas telephone systems cooperate with the Weather Bureau in the dissemination of the weather forecasts and warnings, and in many cases the fruit grower can obtain the information free of cost by simply calling up the nearest exchange.

Personally I should be glad to render any assistance needed in the way of advising how to place and read the thermometers and when to start the heaters. Those having orchards in the valleys or so-called pockets should be particularly watchful, especially if the night is clear with little or no wind, as, owing to air drainage, the valleys become colder than the hillsides when there are no clouds; on the other hand, when the sky is heavily overcast or when there is moisture in the form of either rain or snow, there is little difference between the temperature of the valleys and the hills, or if there is any difference, the valleys are warmer. There appears to be less damage to fruit by frost on or along the southern Ozark border, which has an elevation between 500 and 1,000 feet, than in either the valleys or on top of the highest hills; this is probably due to the fact that the air of comparatively



still, cold nights, when usually the greatest damage is done, is kept moving and probably mixing at the elevations lying between the two extremes, by reason of drainage currents.

*Daily minimum temperature, Columbia, Mo., 1891-1910 (April).*

## FIRST DECADE.

	April.															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1891.....	31	32	28	27	22	30	30	40	51	43	35	47	56	52	48	48
1892.....	56	43	54	56	39	33	42	35	28	33	39	34	42	33	26	45
1893.....	43	38	55	51	53	56	70	52	39	42	48	53	44	30	28	43
1894.....	34	36	54	40	32	33	50	40	42	34	30	33	41	48	45	53
1895.....	38	33	32	39	56	46	42	42	40	44	52	56	41	40	53	46
1896.....	30	29	21	32	42	46	43	43	44	53	62	58	54	50	63	68
1897.....	43	45	50	43	43	36	35	40	35	41	31	46	44	38	39	37
1898.....	40	32	43	36	26	21	25	42	39	42	35	47	39	38	35	44
1899.....	21	24	26	18	28	27	34	33	28	41	59	45	60	48	40	29
1900.....	34	33	44	30	33	37	42	51	42	33	28	31	35	41	51	54

Average..... 37.0 34.5 40.7 37.2 37.4 36.5 41.3 41.8 38.8 40.6 41.9 45.0 45.6 41.8 43.1 40.7

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	10-year mean.
1891.....	55	50	60	62	59	57	48	49	48	49	52	46	49	59	.....
1892.....	54	46	41	43	43	41	33	47	47	54	63	50	35	49	.....
1893.....	41	51	51	34	33	33	26	43	42	49	38	48	45	45	.....
1894.....	62	67	40	39	38	33	35	45	47	54	56	60	65	62	.....
1895.....	39	37	38	48	50	41	49	50	57	57	53	55	60	60	.....
1896.....	67	58	51	65	53	52	59	60	60	60	57	71	60	52	.....
1897.....	29	45	35	36	50	66	56	62	59	51	52	56	48	44	.....
1898.....	58	54	41	40	47	54	50	44	40	41	42	50	43	55	.....
1899.....	46	46	43	49	44	49	47	47	46	59	68	58	64	65	.....
1900.....	50	47	42	51	51	44	57	58	54	54	57	56	51	50	.....

Average..... 50.1 49.1 45.1 46.7 46.8 47.0 46.0 50.5 50.0 52.8 53.8 55.0 52.0 54.1 45.0

## SECOND DECADE.

	April.															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1901.....	30	33	30	40	37	38	38	38	38	48	46	47	47	45	40	44
1902.....	30	28	38	34	36	44	32	26	37	35	39	35	37	42	38	32
1903.....	54	45	32	29	45	49	40	38	46	58	56	53	41	39	39	42
1904.....	44	37	29	31	40	36	43	31	35	31	44	36	33	32	35	29
1905.....	54	48	54	39	33	31	31	42	49	45	43	34	35	36	32	29
1906.....	31	37	50	50	45	36	49	50	45	39	48	57	43	39	34	34
1907.....	32	38	48	50	37	35	42	36	32	29	36	32	27	27	42	32
1908.....	32	26	24	41	45	42	56	42	38	51	40	37	47	57	46	37
1909.....	30	27	38	45	59	43	36	31	27	27	47	36	30	41	39	54
1910.....	41	47	50	56	33	43	37	54	46	52	57	47	45	55	47	33

Average..... 37.8 36.6 39.9 41.5 41.0 39.7 40.4 38.8 39.3 41.5 45.6 41.4 38.7 41.3 39.2 36.6

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	10-year mean.
1901.....	34	31	34	35	33	38	45	41	53	58	60	59	55	53	.....
1902.....	40	40	45	50	70	47	39	43	49	45	41	54	53	53	.....
1903.....	35	49	50	51	42	37	33	48	40	30	44	57	53	34	.....
1904.....	27	40	35	32	32	46	57	56	41	40	37	39	40	47	.....
1905.....	26	30	38	57	42	36	43	50	55	53	48	55	46	43	.....
1906.....	44	48	48	55	49	48	45	50	58	50	61	55	51	54	.....
1907.....	28	38	37	33	29	40	41	50	39	35	41	52	39	35	.....
1908.....	46	52	48	55	59	59	62	57	54	41	36	35	37	28	.....
1909.....	53	46	42	40	45	40	35	40	50	44	44	43	51	36	.....
1910.....	30	33	33	29	48	40	28	27	32	37	46	57	64	56	.....

Average..... 36.3 41.6 41.0 43.7 44.9 43.1 42.8 46.2 47.1 43.3 45.8 50.6 48.9 43.9 42.0

*Daily minimum temperature, Columbia, Mo., 1891-1910 (May).*

## FIRST DECADE.

	May.															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1891.....	43	49	49	46	44	32	36	45	54	46	43	39	51	45	49	50
1892.....	63	65	58	50	54	50	47	44	54	45	47	35	51	59	55	49
1893.....	44	34	41	48	58	45	43	50	51	56	64	52	48	58	53	45
1894.....	58	46	60	53	57	62	52	50	60	53	42	50	58	63	65	68
1895.....	64	60	66	64	60	61	58	58	63	62	43	38	48	33	45	44
1896.....	58	49	49	56	58	62	60	61	65	64	65	66	60	56	49	58
1897.....	40	38	48	40	45	52	55	59	60	46	50	46	48	40	42	47
1898.....	59	53	51	46	42	39	40	40	50	55	51	49	50	54	59	56
1899.....	59	61	55	41	44	56	61	55	54	58	45	62	50	56	64	69
1900.....	45	52	40	48	48	59	63	59	45	37	55	57	63	65	59	60

Average..... 53.3 50.7 51.7 49.2 51.0 51.8 51.5 52.1 55.0 52.2 51.4 49.4 52.7 52.9 54.0 54.6

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	10-year mean.
1891.....	44	49	55	62	54	58	52	50	56	47	40	39	45	50	61	.....
1892.....	60	52	50	42	37	35	38	47	58	55	44	56	54	63	61	.....
1893.....	43	42	60	55	61	65	45	46	55	57	51	50	50	58	58	.....
1894.....	67	47	37	36	47	46	45	49	53	51	57	43	51	53	38	.....
1895.....	35	39	43	45	42	43	44	50	59	49	50	65	66	68	67	.....
1896.....	55	65	63	59	67	63	63	67	74	64	63	52	48	63	57	.....
1897.....	52	55	55	69	57	59	56	46	40	54	59	61	47	51	30	.....
1898.....	57	60	63	60	59	56	56	58	62	57	64	60	63	58	57	.....
1899.....	52	43	52	49	53	56	50	46	55	65	68	62	63	61	60	.....
1900.....	60	48	48	43	44	55	59	55	56	59	62	65	64	64	64	.....

Average..... 52.5 50.0 52.6 51.1 52.1 53.6 50.8 51.4 56.8 55.8 55.8 55.3 55.1 58.9 56.1 53.0

## SECOND DECADE.

	May.															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1901.....	54	58	63	62	59	52	50	50	53	46	46	45	34	41	57	60
1902.....	60	65	68	61	60	57	47	48	55	55	48	57	63	60	52	57
1903.....	30	41	37	40	49	49	53	57	58	55	61	60	59	59	57	55
1904.....	52	50	51	55	58	58	60	52	45	45	54	53	46	45	43	50
1905.....	53	59	66	59	50	54	44	52	52	71	54	44	38	53	49	48
1906.....	58	56	48	54	40	36	33	40	31	44	58	59	62	60	61	64
1907.....	32	38	35	28	41	41	50	53	46	54	38	54	54	44	36	40
1908.....	39	33	42	49	49	44	46	43	42	50	60	57	62	60	56	60
1909.....	31	36	41	47	60	48	41	53	42	37	42	49	59	64	53	47
1910.....	53	43	42	42	43	46	45	44	46	54	52	44	37	39	50	51

Average..... 46.2 47.9 49.3 49.7 51.8 48.5 46.9 49.2 47.0 51.1 51.3 52.2 54.4 52.5 51.4 53.2

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	10-year mean.
1901.....	61	59	59	50	48	47	64	50	47	38	42	40	48	50	46	.....
1902.....	67	72	65	70	67	62	63	62	59	52	48	46	51	57	61	.....
1903.....	63	64	59	59	61	70	62	66	62	66	60	55	61	52	50	.....
1904.....	48	44	48	48	51	62	64	59	63	54	48	54	61	59	55	.....
1905.....	49	46	49	54	55	59	52	49	53	44	57	60	66	58	56	.....
1906.....	65	65	55	49	51	58	63	66	64	65	47	45	46	66	65	.....
1907.....	55	66	54	47	46	59	63	64	65	46	40	41	50	56	53	.....
1908.....	65	60	56	63	62	52	63	71	66	60	60	60	60	56	53	.....
1909.....	53	55	59	52	50	55	51	54	55	53	52	54	62	57	54	.....
1910.....	51	44	54	60	65	59	56	49	46	54	53	56	62	52	47	.....



Date of the last killing frost, or a temperature of 32° F. or lower, in spring, at  
Mexico, Mo., 1881-1910.

## FIRST DECADE.

Year.	Month and date.	Day of year.	Year.	Month and date.	Day of year.
1881.....	Apr. 14.....	104	1887.....	Apr. 5.....	95
1882.....	Apr. 12.....	102	1888.....	Apr. 20.....	111
1883.....	Apr. 1.....	91	1889.....	Apr. 6.....	96
1884.....	Apr. 22.....	113	1890.....	Apr. 1.....	91
1885.....	Apr. 13.....	103			
1886.....	Apr. 6.....	96	Average.....	Apr. 10.....	100.2

## SECOND DECADE.

1891.....	May 6.....	126	1897.....	Apr. 11.....	101
1892.....	Apr. 15.....	106	1898.....	Apr. 7.....	97
1893.....	Apr. 23.....	113	1899.....	Apr. 16.....	106
1894.....	do.....	113	1900.....	Apr. 12.....	102
1895.....	Apr. 19.....	109			
1896.....	Apr. 4.....	95	Average.....	Apr. 16-17...	106.8

## THIRD DECADE.

1901.....	Apr. 22.....	112	1907.....	May 5.....	125
1902.....	Apr. 16.....	106	1908.....	May 2.....	123
1903.....	May 1.....	121	1909.....	do.....	122
1904.....	Apr. 21.....	112	1910.....	Apr. 25.....	115
1905.....	Apr. 23.....	112			
1906.....	May 7.....	127	Average.....	Apr. 27-28...	117.5

Average date of the last 10 years, 11 days later than preceding 10 years.

Date of the last killing frost, or a temperature of 32° F. or lower, in spring, at  
Columbia, Mo., 1891-1910.

## FIRST DECADE.

Year.	Month and date.	Day of year.	Year.	Month and date.	Day of year.
1891.....	May 6.....	126	1897.....	Apr. 17.....	107
1892.....	Apr. 15.....	106	1898.....	Apr. 7.....	97
1893.....	Apr. 23.....	113	1899.....	Apr. 16.....	106
1894.....	Apr. 12.....	102	1900.....	Apr. 12.....	102
1895.....	Apr. 3.....	93			
1896.....	Apr. 4.....	94	Average.....	Apr. 15-16...	106.8

## SECOND DECADE.

1901.....	Apr. 19.....	109	1907.....	May 4.....	124
1902.....	Apr. 17.....	107	1908.....	Apr. 30.....	120
1903.....	May 1.....	121	1909.....	May 2.....	122
1904.....	Apr. 21.....	112	1910.....	Apr. 25.....	115
1905.....	Apr. 18.....	108			
1906.....	May 9.....	129	Average.....	Apr. 26-27...	117.5

Average date of the last 10 years, 11 days later than preceding 10 years.



DECEMBER, 1910.

## MONTHLY WEATHER REVIEW.

1839

TABLE 1.—Climatological data for December, 1910. District No. 6, Missouri Valley.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast days.	Prevailing wind direction.
Wyoming.																				
Barnum.	Johnson.	5,500	5								0.52		0.50	5.0	3	23	5	3	w.	Thomas Freeguard.
Basin.	Big Horn.	3,862	11																	O. J. Robertson.
Bennett.	Carbon.		2								0.43		0.38		3	9	17	5	w.	Chas. C. Young.
Casper.	Natrona.	5,101	2	31.0		52	14	2	29	40	0.20		0.20	2.0	1	16	1	14	sw.	M. C. Cook.
Cheyenne.	Laramie.	6,088	30	31.8	+ 2.8	58	1	10	30	37	0.09	+ 0.38	0.40	7.1	4	12	11	8	nw.	U. S. Weather Bureau.
Chugwater.	do.	5,282	9	33.4	+ 4.7	65	4	4	20	51	0.00	- 0.32	0.30	6.0	3				w.	A. H. Woolever.
Clark.	Big Horn.	4,320	4	33.3		57	15	13	29	34	T.		T.	T.	0	17	8	6	w.	Chas. A. C. Snow.
Cody.	do.	5,000	3																	F. A. Fish.
Crystal Lake.	Laramie.	6,900	1																	Cheyenne City Engineer.
Dome Lake.	Sheridan.	8,821	2	30.8		45	18	1	29	35	0.50		0.30	5.0	3	19	2	10	nw.	Abe Mills.
Douglas.	Converse.	4,793	1	27.5		56	15	3	24	44	0.45		0.20	T.	5					Henry C. Miller.
Dubois.	Fremont.	6,909	3	26.8		55	14	0	18	48	T.		T.	T.	0	10	17	4	w.	Dr. F. H. Welty.
Eaton's Ranch.	Sheridan.	4,000	3	34.2		67	14	3	31	45	0.62		0.26	2.0	4	23	5	3	w.	P. A. Eaton.
Echeta.	Crook.	4,200	1								0.57		0.57	4.5	1	16	11	4	n.	M. R. Hunter.
Elk Mountain.	Carbon.		5								1.93		0.66	28.0	5					Wm. Richardson.
Encampment.	do.	7,322	1	24.6		51	2	1	22	40	0.30		0.12	2.5	4	14	7	7	n.	Forest Supervisor.
Erway.	Natrona.	4,270	1	29.6		53	14	4	30	35	0.27		0.18	3.0	3	15	11	5	sw.	Frank Jameson.
Fort Laramie.	Laramie.	4,270	32	29.8	+ 2.2	59	2	3	23	45	0.22	- 0.23	0.20	2.7	3	18	13	0	w.	John Hunton.
Fox Creek Station.	Albany.	9,015	4																	Forest Ranger.
Gillette.	Crook.	4,546	1	26.4		51	1	9	29	30	0.47		0.30	4.7	3	21	7	3		B. D. Perry.
Hunters Station.	Johnson.	8,000	4	23.3		53	15	2	29	37	0.42		0.15	7.0	4	25	4	2	w.	Forest Ranger.
Hyattville.	Big Horn.	4,632	11	30.2	+ 3.0	53	15	7	22	32										Wm. Booth.
Jireh.	Converse.	5,050	6	26.4	+ 2.0	54	2	8	29	30	1.03	- 0.08	0.58	6.5	4	8	13	10	nw.	P. L. Ford.
Kirtley.	do.		1								0.42		0.30	5.0	2	18	6	7	nw.	D. M. Zum Brunnen.
Knowles.	Crook.		1								0.61		0.33	6.7	4					G. A. Knowles.
La Grange.	Laramie.										0.70		0.25	3.5	5	15	8	8	w.	Owen W. Shupp.
Lander.	Fremont.	5,372	18	26.7	+ 7.5	56	1	1	29	43	T.	- 0.70	T.	T.	0	15	10	6	ne.	U. S. Weather Bureau.
Laramie.	Albany.	7,188	19	25.8	+ 3.2	55	1	0	25	40	0.32	+ 0.01	0.24	3.2	2	23	2	6	sw.	University of Wyoming.
Leo.	do.	6,878	9	28.0	+ 4.9	55	21	8	22	30	0.50	- 0.15	0.18	3.5	6				w.	C. A. Cowdin.
Lolabama Ranch.	Big Horn.	7,052	6	22.6	+ 0.1	48	17	1	27	40	0.25	0.00	0.15	1.5	2	9	9	13	w.	Mary E. Painter.
Lovell.	do.	3,825	5	23.2	+ 5.7	47	9	4	17	37	0.00	0.00	0.00	0.0	0	18	6	7	se.	R. Fred Harrison.
Lusk.	Converse.	5,007	20																	D. E. Goddard.
Manville.	do.	5,050	1								0.90		0.30	9.0	5	24	4	3	sw.	C. A. Sherman.
Moorecroft.	Crook.	4,111	7																	Jas. K. Somers.
Moore.	Albany.	6,000	9	31.6	+ 1.7	57	1	7	29	27	0.57	+ 0.11	0.19	7.6	6				w.	Edwin Moore.
Newcastle.	Weston.	4,319	3	26.9		49	15	4	29	37	0.60		0.40	6.0	3	19	5	7	n.	Dr. S. W. Johnson.
Pathfinder.	Natrona.	5,735	4	28.6	+ 2.0	55	17	0	22	44	0.09	- 0.39	0.05	3.0	3	25	1	6	sw.	U. S. Reclamation Service.
Phillips.	Laramie.	4,900	7																	Mrs. Arthur Rugg.
Powell.	Big Horn.	2,376	3	25.8		46	17	5	29	35	0.00		0.00	0.0	0	24	2	5	w.	U. S. Reclamation Service.
Rawlins.	Carbon.	6,748	8	25.6	+ 1.7	50	1	1	22	34	0.44	- 0.41	0.12	7.5	6	18	4	9	w.	C. J. Ehrenfeld.
Riverton.	Fremont.	4,900	2																	Fred L. McGriffin.
Saratoga.	Carbon.	6,785	12	23.8	+ 2.0	54	1	4	25	36	0.33	- 0.93	0.17	5.5	4	17	3	11	w.	G. Frederick Clark.
Sheridan.	Sheridan.	3,790	15	23.8	+ 1.5	47	14	1	5	31	0.74	+ 0.06	0.44	7.1	2	11	4	16	nw.	U. S. Weather Bureau.
Shoshone Dam.	Big Horn.	5,385	4	33.5		52	1	15	29	36	T.		T.	T.	0	22	9	0	w.	U. S. Reclamation Service.
Soldiers' Home.	Johnson.	4,635	18	32.2	+ 4.4	58	15	11	29	36	0.38	- 0.20	0.30	3.8	2	10	19	2	nw.	George L. Courtney.
South Pass City.	Fremont.	7,873	8	17.7		46	14	17	25	45	0.94		0.48	9.4	7	17	8	6	sw.	John Sherlock.
Thermopolis.	do.	4,350	6	26.2	+ 5.4	56	19	1	25	46	T.		T.	T.	0	23	5	3	n.	A. L. Duhig.
Upton.	Weston.		1																	G. E. McPherrin.
Valley.	Big Horn.	6,500	1								0.00		0.00	0.0	0	16	13	2	w.	Jas. L. McLaughlin.
Verona.	Sheridan.		1								0.39		0.20	4.0	2	3	24	4	se.	O. A. Roode.
Wants Ranch.	Carbon.	7,400									1.37		1.00	17.5	6	14	7	10	sw.	Ira G. Wiant.
Wiley.	Big Horn.	5,375	1	35.3		60	15	15	22	31	0.00		0.00	0.0	0	26	4	1	w.	T. S. Harrison.
Wyncote.	Laramie.	4,207	3	30.8		50	2	2	23	46	0.21		0.10	3.5	4	19	9	3	nw.	U. S. Reclamation Service.
Yellowstone Park.	Yellowstone Park.	6,200	22	23.0	+ 1.4	46	2	2	31	24	0.88	- 0.94	0.41	8.0	10	8	9	14	a.	U. S. Weather Bureau.
Fountain Hotel.	do.	7,220	4	19.8		47	1	18	25	45	0.41		0.15	8.0	6				w.	Do.
Grand Canyon.	do.	7,900	3	11.4		34	11	23	25	38	1.06		0.25	16.8	8	16	9	6	nw.	Do.
Lake Hotel.	do.	7,733	6	16.8		43	1	14	25	35	1.09		0.28	12.0	6	17	0	14	a.	Do.
Norris.	do.	7,525	6	15.4		46	20	23	25	54	1.50		0.45	15.0	5				w.	Do.
Riverside.	do.	6,500	4	17.4		56	12	16	25	43	1.26		0.20	12.6	12	18	1	12	w.	Do.
Soda Butte.	do.	7,000	5	17.8		44	11	17	25	39	1.10		0.30	11.0	7	19	7	5	sw.	Do.
Sylvan Pass.	do.	7,000	3	19.0		39	27	12	31	37	1.96		0.53	29.2	7	9	4	15	w.	Do.
Thumb.	do.	7,772	4	18.0		40	1	11	25	33	2.59		0.70	23.0	6	11	12	8	sw.	Do.
Tower Falls.	do.	6,250	1	17.0		43	17	9	22	35	0.11		0.03	1.3	5	18	4	9	nw.	Do.
Upper Geyser Basin.	do.	7,395	6	15.4		35	37	7	25	35	1.60		0.30	16.0	7	16	0	15	sw.	Do.
Montana.																				
Adams.	Dawson.	5,200	2	20.2		44	20	11	31	38	T.		T.	T.	0	15	7	9	nw.	W. B. Ennis.
Adel.	Cascade.	5,200	11	30.4	+ 3.3	55	20	10	31	42	0.20	- 0.80	0.15	2.0	2	15	7	9	w.	Bessie F. Burch.
Agricultural College.	Gallatin.	4,700	12	24.8	- 0.2	45	23	4	31	28	0.41	- 0.65	0.26		2	3	24	4	se.	E. Burke.
Augusta.	Lewis and Clark.	4,071	12	27.4	- 0.8	58	13	11	31	42	0.20	- 0.30	0.20	2.0	1	24	2	5	w.	C. C. Covington.
Babb.	Teton.	4,461	4	30.4		57	20	24	31	49	0.01		0.01	0.1	1	3	11	16	sw.	U. S. Reclamation Service.
Bald Butte.	Lewis and Clark.	6,500	1								0.59		0.16	0.9	7	14	10	7		M. W. Alderson.
Big Timber.	Sweetgrass.	4,072	5	34.0		50	15	8	31	33	0.10		0.10	2.0	1	22	5	4	w.	F. A. Severance.
Billings.	do.		1																	J. T. Mjolsness.
Boulder Nursery.	Yellowstone.	3,115	15	26.6	- 1.6	40	2	2	10	40	1.20	+ 0.79	1.20		1				w.	Weather Bureau.
Bowen.	Jefferson.	4,920	14															</		







TABLE 1.—Klimatological data for December, 1910. District No. 6—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast days.
South Dakota.																			
Aberdeen.	Brown.	1,300	20	15.7	- 0.7	50	14	- 15	31	50	0.25	- 0.67	0.20	2.5	2	13	9	9	D. G. Gallett.
Academy.	Charles Mix.		11	22.2	- 0.5	44	14	- 13	6	38	0.86	+ 0.06	0.32	10.0	3	15	9	7	I. T. Lothrop.
Alexandria.	Hanson.	1,352	21								0.35	- 0.30	0.35	3.0	1				W. S. Hill.
Ardmore.	Fall River.	3,557	1																Agent C. B. & Q. R. R.
Armour.	Douglas.	1,521	15								0.85	+ 0.08	0.50	8.5	2				T. J. Markey.
Belle Fourche.	Butte.	3,000	2	28.4		52	13	- 4	6	43	0.04	- 0.05	0.05	0.5	13	8	10		U. S. Reclamation Service.
Brookings.	Brookings.	1,636	21	18.8	- 0.3	48	14	- 16	24	40	0.10	- 0.49	0.10	1.5	11	10	10		Experiment Station.
Camp Creek.	Harding.	3,000	18								0.10	- 0.31	0.08	1.1	2				U. S. Forest Service.
Canton.	Lincoln.	1,248	15	23.2	+ 1.4	52	14	- 7	24	35	0.95	- 0.62	0.05	0.5	1	9	13		John H. Holsey.
Cascade Springs.	Fall River.	3,422	2	22.8		51	2	- 9	7	41	0.05	- 0.05	0.05	0.5	3	18	4	9	Fred Noerenberg.
Castlewold.	Hamlin.	1,685	4	18.1		45	14	- 16	24	38	0.22		0.22	2.5	1	6	7	18	M. N. Bradley.
Centerville.	Turner.	1,229	13	21.0		50	14	- 9	24	47	0.13	- 0.82	0.13	1.3	1	8	11	12	Frank Williams.
Chamberlain.	Brule.	1,353	13	19.4	- 3.0	46	14	- 14	6	37	0.61	+ 0.09	0.61	7.0	3				J. H. Bingham.
Clark.	Clark.	1,779	16	16.4	- 2.4	48	14	- 14	24	38	0.52	- 0.08	0.40	5.2	5	11	11	9	O. H. LaCra.
Cottonwood.	Stanley.	2,414	2	26.0		51	30	- 3	6	42	0.30		0.20	3.0	2	10	17	4	Experiment Station.
Crow Creek.	Buffalo.	1,385									0.56		0.30	7.5	3	7	9	13	William Fuller.
Daviston.	Perkins.		1	25.0		55	13	- 5	35	45						17	7	7	G. G. Davis.
Deadwood.	Lawrence.	4,535	1	30.5		57	15	- 5	31	40									R. E. Grimshaw.
Deerfield.	Pennington.	6,000	1								0.30		0.09	3.5	7	16	5	10	Frank E. Miller.
De Smet.	Kingsbury.	1,720	17	18.7	+ 0.6	46	14	- 14	24	30	0.34	- 0.34	0.34	3.5	2	14	12	5	J. O. Purinton.
Dowling.	Stanley.	2,250	1	27.2		48	15	- 5	6	37	0.10		0.10	1.0	1	11	14	6	M. P. Dowling.
Dumont.	Lawrence.	6,195	1								1.64		0.35	12.0	8	16	8	7	A. B. Wood.
Elk Mountain.	Custer.	4,700	1								0.56		0.30	6.0	2	18	5	8	James E. Blaine.
Elk Point.	Union.	1,127	11	23.0	- 0.3	45	26	- 2	24	38	0.05	- 0.82	0.05	1.2	1	13	2	16	G. W. Freeman.
Englewood.	Lawrence.	5,723	1								1.70		0.50	17.0	8	11	3	17	T. J. Cummins.
Eureka.	McPherson.	1,884	1	17.9		44	21	- 13	6	31	0.25		0.10	2.5	4	10	14	7	Experiment Station.
Fairfax.	Gregory.		7	22.6		44	14	- 13	6	40	0.50		0.60	8.0	3	18	7	6	D. Frank Adams.
Faulkton.	Faulk.	1,505	15	18.3	+ 0.3	45	14	- 16	6	34	0.38	- 0.06	0.31	4.5	2	14	7	10	Miss Belle Talcott.
Flandreau.	Moody.	1,565	20	20.2	+ 2.1	53	14	- 15	24	36	0.10	- 0.61	0.10	1.0	1	9	5	17	W. A. Harris.
Forestburg.	Sanborn.	1,231	18	18.4	- 0.9	48	21	- 14	6	48	0.50	- 0.07	0.40	5.0	2	14	7	10	S. S. Judy.
Fort Meade.	Meade.	3,624	28	32.2	+ 4.9	63	2	- 4	1	45	0.13	- 0.52	0.06	3.3	3	15	7	9	Post Hospital.
Frederick.	Brown.	1,371	3													13	8	10	J. E. Jeffers.
Gannaway.	Buffalo.		12	19.4	+ 0.9	46	2	- 17	6	36	1.00	+ 0.26	0.60	10.0	3	12	9	10	V. P. Drips.
Greenmont.	Lawrence.	6,430	1								1.11		0.35	14.0	8	17	5	9	H. C. Hoffbuhr.
Greenwood.	Charles Mix.		16	23.4	- 2.4	45	14	- 10	6	34	1.15	+ 0.50	0.50	8.0	4	14	9	8	T. C. Williamson.
Hardy Ranger Station.	Lawrence.	6,600	1								1.23		0.64	19.0	7	19	2	10	Mrs. E. A. Gundlach.
Harvey's Ranch.	do.	6,282									1.62		0.32	16.5	8	18	5	8	Jerome Harvey.
Hermosa.	Custer.	3,278	4	29.1		58	15	- 7	31	38	0.30		0.22	3.0	2	18	11	2	S. M. Booth.
Highmore.	Hyde.	1,890	14	17.8	- 2.0	39	14	- 18	6	33	0.44	+ 0.04	0.20	3.5	5	12	9	10	Experiment Station.
Hill City.	Pennington.	5,067	1								0.13		0.10	1.2	3	11	16	4	H. L. Jonas.
Hopewell.	Stanley.			23.4		48	17	- 8	6	35	0.40		0.40	3.0	1	17	8	6	E. R. Myers.
Howard.	Miner.	1,564	18	17.8	- 2.1	50	14	- 16	24	43	0.29	- 0.23	0.29	3.4	5	15	8	8	J. J. Cox.
Howell.	Hand.		8	18.0		45	14	- 20	6	40	0.60		0.40	5.4	5	15	8	8	M. A. Shuster, jr.
Huron.	Beadle.	1,306	28	18.2	+ 2.6	48	14	- 11	24	32	0.29	- 0.33	0.25	2.7	5	10	5	16	U. S. Weather Bureau.
Ipswich.	Edmunds.	1,530	13	16.8	+ 1.0	45	14	- 15	6	38	0.30	- 0.02	0.30	3.0	1	19	7	5	J. B. Taylor.
Kadoka.	Stanley.	2,467	1	26.8		48	30	- 16	6	41	0.60	+ 0.17	0.09	2.0	3	13	8	10	Rev. D. S. Brown.
Kennebec.	Lyman.	1,680	17	21.4	+ 0.2	48	14	- 16	12	45	0.23		0.18	2.5	2	16	0	15	R. C. Van Horn.
Kidder.	Marshall.	1,295	6	15.2		48	14	- 16	12	45	0.23	- 0.23	0.32	10.0	2	14	6	11	H. C. Schussler.
Kimball.	Brule.	1,788	21	20.1	- 0.6	40	2	- 11	6	33	0.42	- 0.23	0.32	10.0	2	14	6	11	G. D. Rose.
La Delle.	Spink.	1,400	13	17.6	+ 1.2	48	14	- 16	30	51	0.45	- 0.28	0.40	6.0	1	18	3	10	E. L. Ebbert.
Lead.	Lawrence.	5,200	1	30.6		51	13	- 10	5	31	0.56		0.16	5.5	8	13	5		E. F. Irwin.
Lemmon.	Perkins.	2,345	1	22.4		54	2	- 8	6	44	0.15		0.10	1.5	2	18	8	6	W. E. Lyman.
Marion.	Turner.	1,447	9	22.5		56	14	- 9	24	34	0.56		0.56	2.5	1	9	12	10	M. H. Dains.
Marston.	Sully.		2	17.7		43	26	- 20	6	38	0.30		0.30	3.0	1	11	7	13	John S. Walker.
Melletoe.	Spink.	1,300	15	18.2	+ 1.4	50	14	- 15	6	35	0.35	- 0.05	0.30	2.5	2	15	2	14	Frank A. Howe.
Menno.	Hutchinson.	1,325	13	21.3	- 0.2	48	14	- 11	6	33	0.33	- 0.38	0.20	3.7	3	13	6	12	J. H. Swanton.
Milbank.	Grant.	1,148	19	16.8	- 1.5	51	14	- 12	24	53	0.40	- 0.38	0.30	2.8	2	12	1	18	I. T. Patridge.
Mitchell.	Davison.	1,312	16	19.6	- 1.8	45	14	- 12	6	39	0.40	- 0.26	0.34	0.10	4	7	19	5	C. W. Downey.
Murdo.	Lyman.	2,300	2	26.4		50	30	- 0	7	40	0.12		0.10	1.2	2	19	7	5	L. C. Bode.
Oelrichs.	Fall River.	3,339	18	24.6	- 0.4	58	1	- 5	5	46	0.70	- 0.09	0.30	7.0	4	13	13	5	J. E. Strouse.
Orman.	Butte.	2,920	4	28.8		55	20	- 1	6	41	0.07		0.02	1.6	4	12	10	9	U. S. Reclamation Service.
Ottumwa.	Stanley.		2	23.7		48	2	- 9	6	44	0.40		0.40	4.0	1	16	8	7	J. W. Bretz.
Pierre.	Hughes.	1,572	18	25.8	+ 5.7	47	14	- 4	31	27									U. S. Weather Bureau.
Plankinton.	Aurora.	1,538	16								0.63	0.00		5.0	4	13	14	4	W. G. Andrews.
Pollock.	Campbell.		4	17.8		48	14	- 20	6	42	0.30		0.10	3.0	4	10	11		J. H. Jones.
Rapid City.	Pennington.	3,251	22	30.2	+ 4.2	57	14	- 3	31	38	0.21	- 0.25	0.11	2.1	5	8	8	15	U. S. Weather Bureau.
Redfield.	Spink.	1,295	12	17.3	+ 0.6	48	14	- 13	6	43	0.10	- 0.32	0.10	1.0	1				



TABLE 1.—Climatological data for December, 1910. District No. 6—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
Colorado—Continued.																				
Castle Rock.	Douglas.	6,220	18	32.0	+ 3.7	63	16	- 6	29	50	1.19	+ 0.49	0.85	10.0	3	14	11	6	w.	Raymond Maxwell.
Cheesman.	Jefferson.	6,890	7	33.4		60	10	8	23	45	0.90		0.67	13.0	3	14	11	6	w.	J. G. Thornburg.
Cheyenne Wells.	Cheyenne.	4,279	18	34.4	+ 4.6	65	9	8	23	45	T.	- 0.39	T.	0	20	7	4	sw.	J. W. Adams.	
Cope.	Washington.	11,000	12	37.9	- 1.5	69	12	5	28	60	0.14	- 0.65	0.13	2.8	2	18	9	4	n.	A. A. Williams.
Corona.	Grand.	11,000	3	35.3		60	17	- 8	30	24	3.92		0.60	49.5	14				U. S. Weather Bureau.	
Denver.	Denver.	5,272	39	35.1	+ 2.9	60	2	11	23	37	0.71	+ 0.11	0.39	9.4	3	13	15	3	s.	Do.
Edgewater.	Jefferson.	5,450	2	33.8		62	9	4	23	43	1.32		0.70	10.5	4	13	10	8	sw.	Dr. N. P. Levin.
Estes Park Fish Hatchery.	Larimer.	8,000									0.27		0.07	4.5	5	7	10	14	w.	G. H. Thomson.
Fort Collins.	do.	4,985	31	31.2	+ 2.1	60	9	3	26	42	0.48	+ 0.14	0.24	4.2	4	18	8	5	nw.	Colorado Agri. College.
Fort Lupton.	Weld.	4,907																		R. W. Benedict.
Fort Morgan.	Morgan.	4,319	12	30.8	+ 4.2	56	16	3	26	49	0.17	- 0.03	0.17	2.0	1	16	9	6	w.	Della M. Scott.
Frances.	Boulder.	9,300	5	26.8		50	15	5	29	33	1.24		0.33	18.0	7	8	18	5	w.	D. A. Barry.
Fry's Ranch.	Larimer.	7,500		30.6		54	1	6	27	38	0.65		0.17	9.0	6	21	5	5	w.	Norman W. Fry.
Georgetown.	Clear Creek.	8,550	9								0.68		0.16	11.5	7	14	8	9	n.	H. L. Corbett.
Greeley.	Weld.	4,649	18	31.2	+ 3.4	64	9	1	23	46	0.56	+ 0.29	0.41	5.0	3	23	4	4	ne.	Nelson Reynolds.
Grover.	do.	5,076		30.6		58	9	8	30	42	0.25		0.12	4.1	3	18	7	6	nw.	George M. Blake.
Hartsel.	Park.	7,670									0.24		0.18	4.2	3	24	2	5	sw.	Emily Kleinknecht.
Hawthorne.	Boulder.	6,000	2								0.59		0.36	6.5	5	26	2	3	sw.	H. E. Chesebro.
Holyoke (near).	Phillips.	8,745	14								0.23	- 0.11	0.23	0.0	1	21	3	7	sw.	A. C. Cauble.
Idaho Springs.	Clear Creek.	7,534	10	31.3	+ 2.2	55	2	8	31	33	0.28	- 0.18	0.15	3.0	2	4	19	8	w.	J. J. Willis.
Keota.	Weld.	4,966																		L. S. Griffin.
La Porte.	Larimer.	5,063	19								0.27	- 0.18	0.13	3.5	3					F. A. Taft.
Le Roy (near).	Logan.	4,380	20								0.36	- 0.09	0.28	4.3	2					Chas. Green.
Longmont.	Boulder.	4,980	8																	Great Western Sugar Co.
Long Peak (near).	Larimer.	8,000	15	24.8		58	11	0	14	55	0.58	+ 0.02	0.33	7.0	2	10	16	5	nw.	Enos A. Mills.
Moraine.	do.	7,775	20	30.4	+ 3.8	57	2	7	18	44	0.78	+ 0.21	0.33	12.0	8	11	16	4	w.	J. D. Stead.
Platte Canon.	Jefferson.	8,492	11								1.00	+ 0.54	1.00	8.5	1	25	5	1	sw.	Denver Union Water Co.
Sedgewick.	Larimer.	7,750	7	31.6		57	3	2	6	53	0.22		0.36	10.0	3	8	15	8	nw.	Miss Guilla Sivers.
Sill Mine.	Clear Creek.	5,573	2	17.1		53	10	- 6	30	42	0.43		0.20	2.2	2	21	8	2	se.	Edwin Lewis, M. D.
Spicer (near).	Larimer.	8,700									0.44		0.30	5.1	3	17	8	6	sw.	Chas. F. Deininger.
Sterling.	Logan.	3,952		31.2		58	9	4	29	48	0.39		0.30	1.5	2	22	4	5	sw.	Frank W. Murphy.
Waterdale.	Larimer.	5,206	7	33.2		61	2	6	23	43	0.40		0.19	2.5	3				ne.	Great Western Sugar Co.
Wray.	Yuma.	3,512	14	33.8	+ 3.9	65	2	6	30	50	0.11	- 0.23	0.04	0.5	4	14	16	1	nw.	P. H. Boothroyd.
Yuma.	do.	4,138	19								0.02	- 0.47	0.01	T.	2	16	6	9	nw.	J. C. Tuomey.
Nebraska.																				
Alasworth.	Brown.	2,521	6	27.2		45	18	3	1	30	1.25			11.5	4	2	19	10	sw.	John M. Cotton.
Albion.	Boone.	1,747	14	21.0	- 4.4	41	10	- 9	7	35	1.40	+ 0.70	0.50	14.0	3	18	4	9	nw.	F. M. Weitzel.
Allamore.	Boxbutte.	3,968	18	27.1	+ 0.4	64	2	- 7	6	86	0.52	+ 0.12	0.30	5.2	5	15	13	3	n.	J. A. Keegan.
Alma.	Harrison.	1,939	13	30.3	+ 1.5	53	16	- 3	6	36	0.40	+ 0.06	0.24	4.0	3	14	12	5	nw.	W. A. Sharpnack.
Anoka.	Boyd.	4	4	20.4		48	2	- 22	6	49	0.57		0.50		2					W. Whita.
Arcadia.	Valley.	2,186	13								1.20	+ 0.76	0.70	13.0	4	4	18	9	nw.	Jas. L. Owen.
Ashland.	Saunders.	1,100	26	26.5	- 0.4	49	36	4	8	30	0.39	- 0.35	0.18	7.5	4	14	12	5	nw.	Dr. A. S. von Mansfelder.
Ashton.	Sherman.	2,061	18								0.36	+ 0.05	0.15		5	15	5	11	nw.	F. Rein.
Atkinson.	Holt.	2,108	5	22.4		45	14	- 13	6	42	0.75		0.40	7.5	2	19	8	4	nw.	Chas. J. Wilson.
Auburn.	Nemaha.	1,051	18	28.5	- 0.9	52	26	1	8	34	0.50	- 0.48	0.40	5.0	2	13	10	8	nw.	J. R. Huffman.
Aurora.	Hamilton.	1,792	17	26.5	- 1.1	46	14	5	6	27	0.95	+ 0.46		9.5	3	22	2	7	n.	Agent C. B. & Q. R. R.
Beatrice.	Gage.	1,235	19	28.2	- 0.2	47	26	4	7	30	0.90	- 0.10	0.50	8.0	5	16	3	12	nw.	Wm. S. Waxham.
Beaver City.	Furnas.	2,147	19	30.6	0.0	50	16	2	6	34	0.39	- 0.09	0.13		4	7	13	11	se.	T. M. Davis.
Bellevue.	Sarpy.	1,210	20	28.9		49	26	4	24	31	0.60	- 0.61	0.35	6.0	3	13	7	11	nw.	Prof. A. A. Tyler.
Benkelman.	Dundy.	2,968	16								0.25	- 0.06	0.15	1.0	2	3	20	8	sw.	R. D. Drullner.
Bertrand.	Phelps.	2,515	3								0.52		0.17	8.5	4	16	11	4	sw.	W. F. Dobbin.
Blair.	Washington.	1,122	15	23.4	+ 0.3	45	36	0	24	27	0.47	- 0.40	0.21	7.2	4	16	7	8	nw.	D. C. Van Deusen.
Bloomfield.	Knox.	1,122	5	21.0		40	14	- 6	34	33	1.30		0.80	13.0	4	12	8	11	nw.	Dr. L. C. Bleick.
Bradshaw.	York.	1,715	13								1.10	+ 0.33	0.50	11.0	3	16	13	2	nw.	E. C. Roggy.
Bridgeport.	Morrill.	3,658	14	28.8	+ 2.1	55	2	2	6	42	0.35	- 0.19	0.15	3.5	3					R. H. Willis.
Brokenbow.	Custer.	2,477	16	28.0	- 0.4	46	18	0	6	31	0.75	+ 0.33	0.34	10.0	5	16	2	13	nw.	Agent C. B. & Q. R. R.
Burge.	Cherry.	2,674	4																	H. A. Davis.
Calro.	Hall.	1,951	2																	Elliott Harrison.
Callaway.	Custer.	2,555	18	28.4	+ 1.1	51	16	- 6	6	42	1.34	+ 0.87	0.68	20.0	5	15	8	8	nw.	J. H. Evans.
Cambridge.	Furnas.	2,258	4	30.3		52	26	3	6	40	0.43		0.20	4.0	3	13	7	11	nw.	Chas. Jensen.
Canton (near).	Sioux.	2	2	27.2		60	2	- 4	6	45	0.30		0.25	3.0	2	15	4	12	nw.	A. E. Hann.
Columbus.	Platte.	1,442	18	24.8	- 1.4	45	17	- 1	24	33	0.68	+ 0.06	0.26	11.0	4	13	13	5	nw.	A. L. Rush.
Cozad.	Dawson.	2,496	3								0.40		0.25	6.0	2					A. A. Luttin.
Creighton.	Knox.	1,600	14								0.90	+ 0.01	0.65	9.0	3	9	17	5	nw.	C. L. Cherry.
Crete.	Saline.	1,368	28	27.1	- 0.5	48	31	5	12	30	0.55	- 0.16	0.40	8.9	3	15	5	11	n.	Doane College.
Culbertson.	Hitchcock.	2,565	24			58	26				0.15	- 0.26	0.05	1.5	4	3	0	28	w.	J. H. Corrick.
Curtis.	Frontier.	2,553	13	31.0	+ 2.3	57	9	2	6	40	0.35	- 0.12	0.30	3.5	2	11	12	8	s.	Dr. S. R. Ramee.
David City.	Butler.	1,619	22	25.6	- 0.8	49	30	2	0	33	0.05	- 0.17	0.25	8.6	4	10	15	6	nw.	S. Clingman.
Dawson.	Richardson.	945	16																	



TABLE 1.—Climatological data for December, 1910. District No. 6—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.					Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		Prevailing wind direction.
Nebraska—Continued.																				
Hayes Center.	Hayes.		17	32.1		55	25	9	6	39	0.65	+ 0.12	0.30	5.5	5	22	7	2	n.	C. A. Ready.
Hay Springs.	Sheridan.	3,821	23	25.4	+ 0.5	57	2	9	6	44	0.70	- 0.06	0.60	8.0	5	12	11	8	nw.	A. Kucieczek.
Hebron.	Thayer.	1,458	25	28.5	- 0.9	53	14	3	6	28	0.56	- 0.07	0.30	6.5	5					Dr. C. M. Easton.
Hemingford.	Boxbutte.	4,256	2								0.32		0.13		5					A. S. Enyeart.
Hendley.	Furnas.	2,231	2								0.50		0.25	6.0	2					T. L. Jones.
Hillsdale.	McPherson.		12	30.0		50	2	5	27	52	0.55		0.20	7.5	6	15	8	8	nw.	Mrs. M. R. Lloyd.
Holdrege.	Phelps.	2,324	30	30.0	+ 1.2	50	17	0	6	31	1.10	+ 0.56	0.40	11.0	4	19	7	5	nw.	Agent C. B. & Q. R. R.
Hooper.	Dodge.	1,228	13	23.5	- 0.8	45	26	1	24	30	0.80	+ 0.10	0.60	8.0	3	17	0	14	nw.	Dr. W. H. Helme.
Imperial.	Chase.	3,278	20	32.8	+ 3.9	62	4	6	6	46	0.57	0.00	0.62	5.0	5	11	12	8	nw.	Robt. Malcolm.
Kearney.	Buffalo.	2,146	22	29.5	+ 1.0	52	17	9	7	34	0.50	+ 0.01	0.15	5.0	5	14	6	11	nw.	N. C. Dunlap.
Kimball.	Kimball.	4,097	22	29.2	- 1.1	63	18	8	22	57	0.55	0.00	0.10	5.5	6	15	11	5	w.	F. J. Bellows.
Kirkwood.	Rock.		16	23.8	- 0.8	45	14	15	6	47	0.90	+ 0.18	0.60	9.0	2	18	6	7	nw.	Mrs. C. Arter.
Kowanda.	Deuel.		2								0.10		0.03		4					Geo. W. Huise.
Lexington.	Dawson.	2,385	22	28.4	+ 0.1	49	17	6	6	32	0.57	- 0.10	0.37	8.1	4	11	8	12	nw.	Robt. Chadwick.
Lincoln.	Lancaster.	1,189	29	27.3	+ 0.4	49	26	7	24	25	0.57	- 0.10	0.25	3.0	1	19	6	6	w.	U. S. Weather Bureau.
Lodgepole.	Cheyenne.	3,820	12	31.4	+ 3.3	62	2	0	6	44	0.25	- 0.24	0.25	3.0	1	19	6	6	w.	R. T. Kidney.
Loup.	Sherman.	2,067	16	24.0	- 2.3	43	14	12	6	37	1.05	+ 0.55	0.45	12.0	4	24	2	5	nw.	E. S. Hayhurst.
Loyal.	Custer.		2												18	8	5	nw.	C. H. Cass.	
McCook.	Redwillow.	2,506	16	30.1	+ 1.2	60	24	2	6	48	0.17	- 0.24	0.10	1.8	2	21	2	8	nw.	C. G. Coglier.
McCool Junction.	York.	1,575	13								1.30	+ 0.60		15.0	4					L. L. Slagle.
Madison.	Madison.	1,585	19	23.6	- 1.3	51	14	4	24	30	1.30	+ 0.54	0.60	12.0	4	19	2	10	nw.	Dr. F. A. Long.
Marquette.	Hamilton.	1,580	31								0.90	+ 0.24	0.50	9.0	3					John Ellis.
Mason City.	Custer.	2,257	11								1.05	+ 0.33	0.50	11.5	4					J. A. Amsherry.
Minatare.	Scottsbluff.	3,825	1								0.50		0.30	6.4	5	10	12	9	nw.	Anthony Kennedy.
Minden.	Kearney.	2,169	33		0.0						0.59	- 0.10		3.5	2	21	1	9	nw.	Joel Hull.
Mitchell.	Scottsbluff.		2	29.6		63	2	2	23	48	0.28		0.10	3.2	4	21	5	5	nw.	U. S. Reclamation Service.
Nebraska City.	Otoe.	941	32	28.8	+ 1.6	50	26	0	8	32	0.60	- 0.22	0.50	6.0	2	10	11	10	nw.	Agent C. B. & Q. R. R.
Norfolk.	Madison.	1,532	24	23.0	- 0.8	44	10	5	24	35	0.83	+ 0.05	0.43	7.0	3	17	6	8	nw.	Dr. P. H. Salter.
North Loup.	Valley.	1,961	23	23.2	- 3.7	43	14	13	6	38	1.04	+ 1.05	1.00	16.4	5	14	13	4	nw.	W. G. Road.
North Platte.	Lincoln.	2,841	37	30.2	+ 3.6	54	2	2	6	40	0.72	+ 0.27	0.24	8.0	6	12	11	8	w.	U. S. Weather Bureau.
Oakdale.	Antelope.	1,722	23	30.8	- 3.7	40	14	4	6	36	0.78	+ 0.08	0.62	8.5	3	17	7	7	nw.	G. S. Clingman.
Odell.	Ogallala.	1,278	17								0.67	- 0.10	0.20	5.2	5	12	3	16	sw.	Agent C. B. & Q. R. R.
Omaha.	Douglas.	1,103	39	27.1	0.0	48	26	6	24	25	0.37	- 0.54	0.27	5.8	4	10	7	14	n.	U. S. Weather Bureau.
Ord.	Valley.	2,062	16								1.03	+ 1.04	1.01		3	15	7	9	n.	James Milford.
Orleans.	Harlan.	1,993	3								0.30		0.15	2.0	2					James McGeachin.
Oscola.	Polk.	1,644	10	26.0		48	18	6	6	41										G. T. Ray.
Palisade.	Hitchcock.		2																	E. E. Young.
Palmyra.	Otoe.	1,142	15	28.0	+ 1.0	52	26	8	7		0.46	- 0.20	0.38	4.5	2	14	12	5	n.	Thomas Coles.
Pawnee City.	Pawnee.	1,175	15	27.2	0.0	52	14	2	8	39	0.50	- 0.32		5.0	3	21	3	7	nw.	F. A. Barton.
Paxton.	Keith.	3,060	1								0.40		0.20	4.0	4					H. D. Lule.
Plymouth.	Jefferson.	1,419	7	26.8		49	14	8	7	28	0.53		0.26	9.0	4	7	15	9	nw.	John Ruppel.
Purdum.	Blaine.		9	26.4		46	14	5	6	43	1.18	+ 0.21	0.60	11.8	5	15	9	7	sw.	T. C. Jackson.
Ravenna.	Buffalo.	2,028	33	26.6	- 1.6	47	14	9	6	35	0.87	+ 0.21	0.34	10.6	5	13	6	12	sw.	H. G. Smith.
Redcloud.	Webster.	1,687	18	30.9	+ 3.0	55	14	1	24	52	0.65	+ 0.06	0.33	9.5	4	15	2	14	nw.	Chas. S. Ludlow.
St. Libory.	Howard.	1,887	16								1.05	+ 0.37	0.60	10.5	3	15	5	11	nw.	W. I. Meader.
St. Paul.	do.	1,796	16	26.6	- 1.4	46	14	7	6	31	0.87	+ 0.36	0.85	8.5	3	17	8	6	nw.	Paul Anderson.
Santee.	Knox.		23	21.7	- 1.0	46	14	5	6	44	0.70	+ 0.01	0.35	7.0	3	21	6	4	nw.	Nat H. Neff.
Sargent.	Custer.	2,339	12	27.0		45	3	7	7	29	0.75	+ 0.07	0.30		3					Jas. L. Ferguson.
Schuyler.	Colfax.	1,357	18	24.0		44	14	1	24	30	0.77	+ 0.01		8.5	4	9	14	8	n.	John T. Sumner.
Scottsbluff.	Scottsbluff.	3,888	4	31.4		58	2	5	6	42	0.96		0.14	3.5	5	20	3	8	nw.	A. B. McCoskey.
Seward.	Seward.	1,435	20	25.4	- 2.7	48	13	2	23	42	0.85	+ 0.14	0.45	9.0	2	18	7	6	nw.	Agent C. B. & Q. R. R.
Sheridan (near).	Garfield.		3								0.68		0.55	5.5	3	19	5	7	nw.	J. C. Harris.
Sidney.	Cheyenne.	4,000	18								0.18	- 0.13	0.09	4.0	4	26	3	2	nw.	John P. Fischer.
Springview.	Keyapaha.		17	25.3	- 1.6	46	17	0	7	34	1.10	+ 0.35	0.40	11.0	3	13	9	9	nw.	C. L. Phelps.
Stanton.	Stanton.	1,472	19	23.7	- 0.3	42	15	6	28	34	0.80	- 0.04	0.40	8.0	4	14	14	3	nw.	Alfred Pont.
Stratton.	Hitchcock.	2,804	15																	Miss Stella Vennum.
Superior.	Nuckolls.	1,574	27								0.53	0.00	0.38	5.2	2					F. V. Bishop.
Table Rock.	Pawnee.	1,023	22								0.63	- 0.22	0.34	8.5	4	14	13	4	nw.	E. D. Howe.
Tecumseh.	Johnson.	1,113	30								0.50	- 0.30	0.40	5.0	2	7	17	7	nw.	Agent C. B. & Q. R. R.
Tekamah.	Burt.	1,060	19	24.6	- 1.0	45	14	3	24	32	0.60	- 0.38	0.30	6.0	3	9	11	11	nw.	Dr. A. D. Nesbit.
Tobias.	Saline.	1,597	1								1.10		0.50	11.0	3	13	10	8	n.	Frank Ainsworth.
Turlington.	Otoe.	1,214	18	27.4	+ 0.8	50	26	6	24	30	0.55	- 0.51	0.25	5.5	3	13	10	8	nw.	Wm. N. Hunter.
University Farm.	Lancaster.		21	27.2		49	26	5	8	27	0.57	- 0.22		8.8	3	6	19	5	nw.	S. W. Parin.
Valentine.	Cherry.	2,613	22	26.4	+ 1.9	51	30	2	31	35	1.22	+ 0.60	0.66	12.9	4	12	17	2	sw.	U. S. Weather Bureau.
Wahoo.	Saunders.	1,187	8								0.90		0.60	9.0	2	17	4	10	sw.	W. T. Mauck.
Wakefield.	Dixon.	1,387	17	23.2	+ 0.2	49	16	4	24	34	0.47	- 0.33	0.35	4.7	3	16	3	12	nw.	I. H. Weaver.
Walhill.	Thurston.		5					</												



TABLE 1.—Climatological data for December, 1910. District No. 6—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast cloudy days.	Prevailing wind direction.
Iowa—Continued.																				
Inwood	Lyon	1,474	6	21.2		51	14	-10	24	39	0.12		0.09	1.3	2	15	7	9	nw.	F. B. Hanson.
Lamoni	Decatur		3	26.5		47	14	-2	24	33	0.18		0.09	1.6	3	20	0	11	nw.	T. J. Fitzpatrick.
Larabee	Cherokee	1,266	20	22.0	-0.3	47	14	-9	24	33	0.12	-0.84	0.11	1.4	2	14	8	9	nw.	H. B. Strever.
Le Mars	Plymouth	1,224	14	23.1	-0.6	40	14	-5	24	32	0.01	-0.81	0.01	0.1	1	11	14	6	nw.	G. A. C. Clarke.
Lenox	Taylor	1,250	15	25.5	+0.2	46	26	1	8	33	0.15	-0.92	0.12	1.5	3	16	9	6	nw.	J. L. Hurley.
Leon	Decatur	1,120	8	26.2		49	14	0	24	35	0.16		0.10	0.5	2	14	4	13	nw.	Morris Gardner.
Little Sioux	Harrison		5	24.6	-0.4	48	14	-6	24	36	0.42		0.25	4.2	3	13	7	11	nw.	Geo. H. Gibson.
Logan	do.	928	43	24.8	-0.9	47	16	-6	24	31	0.25	-1.02	0.20	2.5	2	7	17	7	nw.	Glenn H. Stern.
Mount Ayr	Ringgold	1,236	17	26.8	+0.9	48	14	-3	24	34	0.44		0.85	0.21	1.9	3	9	13	nw.	A. F. Beard.
Odebolt	Sac.	1,356	13	24.0	+0.5	50	14	-7	24	33	0.21		0.63	0.18	2.2	2	19	4	nw.	E. Starnes.
Onawa	Monona	1,051	10	25.9	-0.3	46	14	-7	24	31	0.50		0.41	0.25	5.0	3	14	7	nw.	C. G. Perkins.
Pacific Junction	Mills	960	11	25.8	-0.5	49	26	-3	8	35	0.48		0.34	0.27	4.8	3	9	15	n.	H. H. McCartney.
Rock Rapids	Lyon	1,358	11	22.4	+1.3	50	14	-7	24	36	0.10		0.49	0.05	1.0	3			nw.	W. C. Wyckoff.
Sheldon	O'Brien	1,422	10	22.6	+0.4	50	14	-5	12	36	0.12		0.69	0.10	0.7	2	11	8	nw.	Dr. A. W. Beach.
Sibley	Oceola	1,212	17	19.5	-0.1	51	14	-12	24	44	0.10		0.68	0.06	1.0	2	12	6	nw.	H. G. Doolittle.
Sioux Center	Sioux		11	21.5	-0.2	47	14	-6	24	31	0.07		0.94	0.05	0.8	2	12	4	nw.	J. de Ruyter.
Sioux City	Woodbury	1,135	21	23.6	+1.0	44	14	-1	24	30	0.32		0.42	0.22	3.0	4	8	12	nw.	U. S. Weather Bureau.
Thurman	Fremont		13	24.4	-1.1	49	26	-5	8	37	0.40		0.99	0.30	4.5	3	7	10	nw.	C. R. Paul.
Wassata	Cherokee	1,157	12	23.5	-0.4	55	14	-12	24	41	0.10		0.75	0.10	1.0	1	16	7	nw.	H. L. Felter.
Woodburn	Clarke	961	11	24.6		48	14	-4	13	40	0.20		1.05	0.20	2.0	1	11	11	sw.	C. B. McDonough.
Kansas.																				
Abilene	Dickinson	1,157	15	31.2	+0.5	60	15	-5	8	40	0.34	-0.53	0.14	3.7	4	7	14	10	sw.	T. W. Sherman.
Agricultural College	Riley	1,100	52	31.2		63	9	3	6	43	0.56	-0.28	0.25	2.5	4	17	5	9	sw.	Prof. J. O. Hamilton.
Alton	Osborne	1,661	8	32.0		63	9	3	6	43	0.35	-0.18	0.20	2.5	4	14	10	7	nw.	H. A. Storer.
Atchison	Atchison	973	19	30.7	-0.4	52	16	7	8	33	1.23	-0.34	0.83	4.0	2	19	2	10	sw.	M. F. Troxell.
Baker	Brown	1,182	10	27.5		51	10	4	8	32	0.40		0.40	4.0	1	5	3	23	s.	E. A. Bastien.
Blakeman	Rawlins	2,894	13	32.2		68	9	-2	6	58	0.03	-0.40	0.03	0.5	1	20	8	3	nw.	C. L. Henderson.
Centralia	Nemaha	1,256	1	28.8		53	16	5	8	33	0.55		0.30	5.0	4	16	6	9	nw.	N. S. Hazen.
Chapman	Dickinson	1,113	6	31.6		57	15	6	6	46	0.53		0.25	3.0	3	16	7	8	s.	Dr. R. McShea.
Clay Center	Clay	1,203	9	30.1		57	14	5	6	38	T.		T.	0	16	0	15	n.	O. L. Slade.	
Colby	Thomas	3,138	19	33.4	+3.3	68	9	3	6	49	0.06	-0.30	0.06	0.8	1	12	15	4	nw.	R. M. Chelf.
Concordia	Cloud	1,398	26	31.4	+1.7	56	14	8	6	33	0.16	-0.32	0.07	1.0	4	8	13	10	n.	U. S. Weather Bureau.
Densmore	Norton	2,200	1	33.6		66	9	2	7	52	0.25		0.10	2.0	3	13	13	5	nw.	J. J. Griffith.
Dresden	Decatur	2,731	16	32.5	+1.4	66	9	3	6	42	0.78	+0.34	0.26	6.5	4	19	4	8	nw.	Jacob Boch.
Ellsworth	Ellsworth	1,537	6	31.4		68	9	4	6	52	0.12		0.08	0.5	2	13	12	6	s.	Geo. Seitz.
Enterprise	Dickinson	1,144	8	32.0		59	16	5	8	45	0.28	-0.59	0.13	1.5	4	10	10	10	ne.	H. O. Wagner.
Esbridge	Wabaunsee	1,412	4	31.0		54	16	12	9	30	0.90		0.76	3.5	4	14	9	8	s.	Geo. D. West.
Farmersburg	Lane	2,850	9	33.9		74	9	3	6	52	0.13		0.07	0.7	4	19	8	4	nw.	C. M. Jennison.
Fort Scott	Bourbon	857	35	33.4	-1.3	56	25	11	2	39	0.61	-1.28	0.24	1.5	5	22	2	7	sw.	E. A. Shaver.
Frankfort	Marshall	1,146	16	29.2	-1.5	54	14	0	8	35	0.65	-0.27	0.30	6.5	4	6	21	4	nw.	E. C. Dunham.
Garnett	Anderson	950	4	33.0		52	26	12	8	26	0.83		0.70	2.5	2	13	13	5	s.	D. D. Judy.
Gove	Gove	2,750	21	34.4	+3.1	68	9	0	6	54	0.15	-0.38	0.10	1.0	3	15	11	5	se.	Jesse Rover.
Hanover	Washington	1,225	13	29.9		55	14	4	8	31	0.37	-0.14	0.24	4.0	3	18	6	7	n.	A. Jaedicke, Jr.
Harrison	Jewell	1,804	9	29.8		55	14	2	6	33	0.29		0.13	3.6	3	17	4	10	n.	Mahlon Terley.
Hays	Ellis	2,000	42	33.0	+1.3	68	9	0	6	46	0.14	-0.27	0.06	1.0	4	21	5	5	nw.	Geo. K. Helder.
Hill City	Graham	3,134	2	34.2		70	9	0	6	51	0.28		0.25	5.0	2				nw.	I. R. Mort.
Horton	Brown	1,188	21	29.4	-1.4	52	16	7	8	30	0.64	-0.25	0.35	3.0	3	11	10	10	nw.	Mrs. S. C. Belden.
Hoxie	Sheridan	2,700	12																	
Jewell	Jewell	1,540	5								0.57		0.35	2.5	3	24	1	5	n.	C. A. Shinn.
Lawrence	Douglas	907	42	31.2	0.0	58	14	10	8	34	1.40	+0.03	0.94	3.5	7	11	12	8	nw.	Prof. H. P. Cady.
Lebanon	Smith	1,812	12	31.3		53	19	5	6	33	0.58	+0.07	0.35	4.5	3	19	3	9	n.	E. V. Bower.
Mankato	Jewell	1,784	1	30.6		55	14	3	6	35	0.35		0.25	3.5	2	13	9	9	n.	R. M. Cauthorn.
Minneapolis	Ottawa	1,259	20	31.2	-0.4	58	9	5	6	45	0.23	-0.40	0.12	2.8	4	16	3	12	s.	J. L. Steele.
Moran	Allen	1,098	14	33.5	+0.3	53	16	12	1	31	0.71	-1.21	0.30	3.0	4	17	6	8	ne.	C. J. Norton.
Natoma	Osborne	1,834	1								0.02		0.02	0.5	1	21	5	5	s.	C. O. Hunt.
Norton	Norton	2,284	12	32.8	+1.9	68	10	2	6	40	0.11	-0.29	0.05	2.0	3	14	11	6	nw.	Sim Sieffel.
Oberlin	Decatur	2,539	23								0.22	-0.39	0.14	2.0	3	20	7	4	nw.	I. K. Huber.
Oketo	Marshall	1,194	2	29.0		53	14	-1	8	33	0.42		0.26	4.8	4	6	17	8	nw.	J. A. Church.
Olathe	Johnson	1,032	15	30.5	-0.9	51	14	8	8	32	1.76	+0.46	1.14	2.5	5	14	10	7	nw.	Dr. S. B. S. Wilson.
Osage City	Osage	1,081	11	30.8		55	16	8	8	36	1.87	+0.76	1.57	3.5	3	22	0	8	n.	W. C. White.
Ottawa	Franklin	926	16	31.8	+0.1	53	16	7	8	35	1.83	+0.70	1.40	2.0	5	13	11	7	nw.	H. F. McDougal.
Phillipsburg	Phillips	1,939	19	32.1	+1.2	56	14	-1	7	36	0.45	-0.19	0.35	3.5	2	17	7	7	se.	N. K. Bailey.
Pleasanton	Linn	862	8	31.8		50	16	12	7	31	0.98		0.40	1.8	4	23	4	4	nw.	B. F. Blaker.
Russell	Russell	1,834	11	33.8	+1.9	70	9	0	6	49	0.18	-0.36	0.08	1.0	3	13	6	12	nw.	R. Brebner.
Russell Springs	Logan		33.4			66	9	1	6	51	0.04		0.04	0.5	1	16	8	7	ne.	D. J. Hutto.
St. Francis	Cheyenne	3,288	2	34.1		66	9	6	6	52	0.10	-0.56	0.05	1.0	2	11	16	4	ne.	J. E. Uplinger.
Salina	Saline	1,227	26	32.0	+0.9	60	10	6	6	48	0.19	-0.56	0.14	1.5	3	15	8	8	nw.	Prof. A. W. Jones.
Scott	Scott	2,971	4																	



TABLE 1.—Klimatological data for December, 1910. District No. 6—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
Missouri—Continued.																				
Hazelhurst	Livingston	17									0.97	- 0.61	0.50	0.7	4					W. H. Baker.
Hermann	Gasconade	482	36								0.67	- 1.24	0.54	T.	5	15	5	11	sw.	C. T. Maushund.
Houston	Texas	1,280	18	32.2	- 3.9	60	17	8	21	37	2.10	- 0.02	0.75	7.0	6	15	7	9		E. Dempsey.
Huntsville	Randolph	790	8																	F. H. Hammett.
Jefferson City §§	Cole	628	29	28.4	- 5.0	55	17	6	24	41	0.67	- 1.31	0.37	3.2	5	19	2	10	w.	Miss Emma Swift.
Kansas City	Jackson	963	21	32.0	+ 0.5	51	14†	12	24	25	1.25	- 0.11	1.12	1.3	4	11	13	7	nw.	U. S. Weather Bureau.
Kidder §§	Caldwell	1,017	20	29.3	+ 0.4	49	26	7	8†	31	0.90	- 0.59	0.75	4.0	2	15	9	7	nw.	J. F. Sharp.
Lamotte	Pettis	863	22	31.4	-	51	16†	7	8†	33	1.56	- 0.29	0.96	4.0	3	16	5	10	nw.	Dr. W. E. Walker.
Lebanon	Laclede	1,265	22	32.4	- 3.1	56	17	12	24	31	1.88	- 0.92	1.23	4.0	3	17	6	8	n.	M. W. Serl.
Lexington §§	Lafayette	813	28	31.4	+ 0.1	51	14	9	8†	31	1.24	- 0.61	1.04	2.0	3	21	0	10	s.	J. W. Keithley.
Liberty	Clay	864	22	31.2	- 0.4	51	16	8	24	32	1.40	- 0.62	1.10	3.0	2	5	16	10	nw.	W. C. Millett.
Lockwood	Dade	1,088	16	35.0	-	55	17	13	2	33	1.23	- 0.68	0.57	2.0	4	18	2	11	nw.	C. S. Crow.
Marshall	Saline	779	20	29.6	- 1.4	48	16†	8	8†	31	1.97	- 0.19	1.17	6.0	3	19*	3*	8*	nw.	Dr. W. H. Black.
Marshfield	Webster	1,492	2	35.0	-	58	29	11	30	36	1.31	-	1.00	5.0	4	12	9	10	se.	C. A. McCombs.
Maryville §§	Nodaway	1,160	20	27.2	+ 1.3	49	26	5	24	34	0.56	- 0.66	0.35	4.2	4	19	3	9	n.	J. R. Brink.
Mount Vernon	Lawrence	1,480	34	34.8	- 2.1	58	17	12	2	36	1.80	- 0.88	1.00	1.0	5	21	2	8	nw.	J. R. White & Son.
Nevada	Vernon	860	16								0.64	- 1.46	0.20	3.0	6	22	4	5	ne.	C. Jewel.
Oregon	Holt	1,113	55	26.6	- 2.0	49	26	2	8†	33	0.67	- 0.87	0.37	4.0	2	14	2	15	nw.	Tom Curry.
Oseola	St. Clair	738	11																	W. E. Matthews.
Pattonsburg	Davies										0.72	-	0.70	3.2	2	15	3	13	nw.	Wm. Burton.
Rolla	Phelps	1,092	29	32.6	-	58	17	9	24	32	1.60	- 0.80	0.61	8.0	4	19	2	10	nw.	Prof. P. J. Wilkins.
St. Charles	St. Charles	614	32	32.3	- 2.6	57	23	9	13	37	1.08	- 1.00	1.03	T.	2	17	4	10	nw.	L. C. Saeger.
St. Joseph	Buchanan	967	39	28.9	-	50	16	8	8	28	1.12	+ 0.09	0.78	4.5	4	9	11	11	nw.	U. S. Weather Bureau.
St. Louis	St. Louis	567	39	32.2	- 3.3	54	17	11	24	27	1.18	- 1.05	0.60	2.2	6	14	3	14	nw.	Do.
Sublett	Adair	1,000	30	29.2	+ 0.6	51	15	0	12	36	0.50	- 1.20	0.50	T.	1	15	8	8	sw.	Lewis Spriggs.
Trenton	Grundy	812	15	28.8	- 0.5	47	14	5	24	25	1.03	- 0.47	0.71	0.8	5	15	6	10	nw.	W. H. Estes.
Unionville	Putnam	1,072	17	25.4	- 2.0	47	26	0	24	42	0.70	- 1.05	0.60	6.0	2	20	4	7	nw.	Geo. W. Davis.
Warrensburg	Johnson	883	32	32.1	- 1.6	51	3	10	24	27	0.96	- 0.90	0.43	5.0	3	17	5	9	nw.	A. F. Smithson.
Warrenton	Warren	865	20	28.9	- 3.4	56	17	6	24	38	0.73	- 1.61	0.57	0.5	5	15	3	13	nw.	Dr. John H. Frick.
Warsaw	Benton	700	6	33.0	-	56	16	5	8	42	1.38	-	0.63	6.0	4	20	3	8	nw.	Dr. J. R. Smith.
Wheatland	Hickory	920	18																	Mrs. S. A. Jackson.

\* , b , etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.

† Also on other dates.

†† Separate dates of falls not recorded.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

§§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

|| Estimated by observer.

||| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.



## MONTHLY WEATHER REVIEW.

DECEMBER, 1910

TABLE 2.—Daily precipitation for December, 1910. District No. 6, Missouri Valley.

[illegible]



		Day of month.																															Total.
Stations.	River basins.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
<i>Montana—Continued.</i>																																	
Fallon	Yellowstone				T.		.16											T.							T.				.14			.01	
Family	Marias																								T.					.11	.01	.02	
Fish Creek	Jefferson			.33																						.23			.32			.25	
Flathead Creek	Yellowstone			T.		.10	.33		.12																								
Forsyth	do.				.10	.16		T.																									
Fort Benton	Missouri					.21	.14																										
Fort Shaw	Sun River				T.													T.							T.							.04	
Foster	Big Horn				.38							.05						.02								.02			.02		.01		
Garneil	Musselshell				.20																												
Goldbutte	Marias																												T.			T.	
Graham	Powder		.16	.12																					T.								
Grayling	Madison		.15	.33						.09															.08						.13	.27	
Great Falls	Missouri				T.	.20																											
Half Moon Pass	Musselshell				T.	.50												.10						.10	.01	.40	.50		.01	.40	T.	.14	
Half Way House	Missouri					1.03			.03																								
Harlowton	Musselshell																								.02	.23					.18	.14	
Havre	Milk River		.04	.02	.34				T.	T.														T.	T.					.01	.12		
Helena	Missouri					.40												.10							T.		.06		T.				
Highwood	do.			T.	.04	.48																				.09				.12	.14	.20	
Huntley	Yellowstone				.45				.09																	.09							
Jones Canyon	Gallatin					.05	.05	.05																.05	.05			.20					
Jordan	Missouri		.05															T.														T.	
Lewistown	do.					.30																	T.	T.		T.						T.	
Livingston																																	



TABLE 2.—Daily precipitation for December, 1910. District No. 6—Continued.

[illegible]



TABLE 2.—Daily precipitation for December, 1910. District No. 6—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Colorado—Continued.																																		
Idaho Springs.	South Platte.											.15											.13										0.28	
Keota.	do.												.04										.13									10	0.27	
La Porte.	do.												.08										.28										0.36	
Le Roy (near).	do.																																0.58	
Longmont.	do.				.25						.33																						0.78	
Longs Peak (near).	do.									.05	.12	.33											.05				.01						0.58	
Moraine.	do.			T.	.05																	1.00										0.60		
Platte Canon.	do.																					.36							T.				0.22	
St. Cloud.	do.			T.	T.				T.	T.			.18										.02										4.03	
Sedgwick.	do.										.32	.15	.40	T.								.85	.11	.40	.45	T.			.11	.09	T.		0.44	
Sill Mine.	do.			.35	.70	T.			T.														.03										0.39	
Spicer (near).	do.				.30						.11											.09											0.40	
Sterling.	do.												.19										.13										0.40	
Waterdale.	do.												.02	.04								T.	T.										0.11	
Wray.	Republican.			.02	.03																													
Yuma.	do.																																	
Nebraska.																																		
Ainsworth.	Niobrara.				*	.80																	.36										1.25	
Albion.	Loup.				.40	.50																.50	T.										1.40	
Allamore.	North Platte.			.10	.30							T.	.05	.05									.02										0.52	
Alma.	Republican.				.04	.12																	.24										0.40	
Anoka.	Niobrara.				.50																		.07										0.57	
Ashland.	Platte.				.12	.18	T.															T.	.03	.06									0.39	
Atkinson.	Elkhorn.				.40	.35																											0.75	
Auburn.	Little Nemaha.				.10	.40				T.													T.	T.									0.50	
Beatrice.	Blue.				.50	.10																.10	.10										0.90	
Beaver City.	Republican.					.13							.10	.06																			0.39	
Bellevue.	Missouri.				.15	.35																.10											0.60	
Blair.	do.				.15	.21																.01											0.47	
Bloomfield.	do.				.80	.10																	.10										1.30	
Bridgeport.	North Platte.			T.	.10								.10																				0.35	
Brokenbow.	Loup.				.11	.21							.03	.06									.15		.34								0.75	
Burge.	Niobrara.																																	1.34
Callaway.	Loup.																																0.43	
Cambridge.	Republican.				T.	.20			T.	T.			.20										.03										0.30	
Canton (near).	North Platte.				.25					T.			T.										.05											0.68
Columbus.	Loup.				.24	.26																	.10	.08									0.90	
Creighton.	Missouri.				.65																		.15	.10									0.55	
Crete.	Blue.				*	.40							T.																				0.15	
Culbertson.	Republican.				.03	.05							.04	.03																			0.35	
Curtis.	do.				T.	.30																	.05										0.65	
David City.	Blue.				.20	.25																.03	.17										0.37	
Dawson.	Great Nemaha.																																	0.95
Elsie.	Republican.			.15		.05							.10													.07								0.87
Enderslake.	Loup.																																	0.96
Ewing.	Elkhorn.				.80	.10																												



TABLE 2.—Daily precipitation for December, 1910. District No. 6—Continued.

[illegible]



## Total.

1.70  
0.75  
0.77  
1.36  
1.85  
1.68  
1.18  
1.10  
1.80  
...  
1.53  
1.50  
1.60  
1.10  
1.55  
2.22

50  
52  
3022  
32  
07  
10

5003

8215

1



TABLE 3.—Maximum and minimum temperatures at selected stations, December, 1910. District No. 6, Missouri Valley.

Date.	Wyoming.														Montana.														
	Basin.		Cheyenne.		Fort Laramie.		Lander.		Newcastle.		Pathfinder.		Sheridan.		Yellowstone Park.		Billings.		Dillon.		Havre.		Helena.		Lewistown.		Malta.		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1.			58	21	52	20	56	22	40	24	55	23	28	21	39	25	37	18	50	22	18	7	25	13	47	6	20	1	
2.			56	37	50	16	55	20	40	24	48	28	37	22	40	27	49	15	47	27	16	7	45	16	47	2	19	7	
3.			45	35	42	21	44	27	35	30	44	23	27	17	38	32	21	16	48	29	13	9	25	16	34	12	14	7	
4.			42	25	45	29	44	24	30	20	41	28	30	20	35	21	31	19	42	25	12	9	38	20	30	6	14	7	
5.			32	18	35	22	41	12	35	10	34	18	32	4	30	14	19	0	43	18	12	-10	32	20	36	-4	18	6	
6.			47	18	50	9	46	10	34	9	40	19	34	6	33	22	40	0	41	20	13	-8	26	15	35	5	16	7	
7.			45	24	45	13	48	11	35	15	45	25	33	1	34	21	36	14	42	20	19	-10	37	12	41	19	10	-11	
8.			47	26	54	12	48	10	36	20	45	17	33	9	35	15	32	12	44	24	39	12	38	19	36	14	8	-10	
9.			52	27	44	12	53	16	41	20	47	35	40	18	34	21	40	23	43	25	35	19	38	30	41	9	35	5	
10.			38	20	38	13	37	13	36	16	42	20	37	6	32	18	30	-2	41	30	24	-2	30	15	40	6	30	-1	
11.			38	28	41	24	36	20	40	14	42	29	30	6	37	24	28	0	44	24	9	-5	20	7	42	19	10	-12	
12.			41	25	40	28	45	15	38	16	44	27	40	9	37	18	30	6	44	25	43	6	24	11	44	19	18	-2	
13.			43	29	51	13	40	9	41	14	40	13	43	11	33	13	41	15	43	21	45	39	31	16	50	19	34	6	
14.			49	24	51	17	42	9	38	14	55	11	47	13	35	14	43	22	41	18	43	20	29	17	50	19	41	10	
15.			53	21	55	10	42	9	49	12	40	18	40	10	37	13	44	8	40	20	37	12	32	3	42	20	27	1	
16.			51	28	50	10	42	9	48	14	40	9	45	16	32	14	48	22	42	22	40	18	37	14	41	19	32	9	
17.			48	17	52	9	38	8	44	12	36	12	40	10	28	9	39	6	39	16	37	18	25	16	37	16	34	3	
18.			47	14	43	9	36	8	35	16	42	22	44	18	28	9	39	13	41	21	40	16	24	13	42	20	34	7	
19.			44	30	44	21	53	11	40	22	46	20	46	37	36	13	42	33	50	28	43	29	25	12	47	29	43	22	
20.			45	23	57	18	42	14	41	20	42	14	44	25	36	14	48	25	52	30	38	22	20	8	54	27	33	12	
21.			32	20	35	19	37	18	40	24	42	13	37	21	27	12	39	23	50	27	35	25	35	13	37	20	40	9	
22.			25	14	26	18	29	5	32	18	32	0	30	16	22	6	36	21	48	23	28	15	31	25	30	17	40	10	
23.			40	16	44	3	51	8	30	8	35	0	39	16	28	18	40	18	46	20	37	15	46	25	44	19	42	7	
24.			46	29	49	5	48	15	44	22	40	27	43	28	32	13	40	32	42	16	37	23	39	30	41	22	45	18	
25.			31	18	38	19	34	5	34	20	36	7	37	15	24	5	38	22	40	12	30	24	33	27	40	21	44	16	
26.			44	14	46	16	33	1	38	10	30	14	42	14	22	10	39	22	37	13	35	19	36	20	40	20	46	15	
27.			40	18	37	9	30	7	34	16	32	19	37	14	27	10	41	18	37	14	24	19	34	18	35	18	45	10	
28.			26	12	33	11	33	5	28	12	28	12	31	15	22	8	36	19	35	14	26	13	34	27	30	15	44	1	
29.			31	10	39	10	35	1	28	4	30	6	37	13	24	8	36	18	36	11	24	3	34	20	32	16	15	-8	
30.			40	21	47	20	41	13	41	12	31	20	46	19	27	12	40	27	39	9	36	-2	37	27	35	21	39	-5	
31.			31	14	35	21	32	5	38	16	28	18	27	-5	30	2	27	12	37	17	-2	-13	27	-10	20	-10	33	-9	
Mns.			42.1	21.5	44.4	15.2	41.6	11.6	37.5	16.3	39.7	17.6	37.3	14.4	31.1	14.9	37.1	16.0	42.7	20.4	28.6	11.3	31.8	16.6	39.4	14.9	29.8	4.5	

Date.	Montana.				North Dakota.								South Dakota.															
	Miss City.		Poplar.		Berthold Agency.		Bismarck.		Dickinson.		Jamestown.		Williston.		Aberdeen.		Chamberlain.		Huron.		Kadoka.		Lemmon.		Pierre.		Rapid City.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.	31	14	29	-11	20	-12	22	-3	30	-3	17	5	20	-12	26	-2	25	1	22	-1	39	8	22	0			34	14
2.	36	18	20	2	36	9	36	13	45	13	30	15	20	4	33	-2	43	13	36	13	39	10	54	10		55	24	
3.	21	12	13	1	19	1	18	7	20	5	28	5	7	1	22	13	40	12	24	9	42	11	20	5		27	17	
4.	21	16	17	4	16	6	17	8	16	8	14	4	14	7	24	8	24	10	23	7	18	15	14	9		17	13	
5.	18	8	14	-1	16	-3	17	-14	16	-10	13	1	14	-11	24	18	23	11	22	-2	18	3	15	3		26	8	
6.	20	2	18	-8	17	-22	16	-13	19	-14	6	2	15	-11	19	-6	20	-14	19	-11	35	0	26	-8		43	6	
7.	20	8	11	-16	14	-15	17	-6	20	-14	3	1	12	-12	16	-5	26	-3	16	-4	30	7	22	11		33	17	
8.	37	10	20	-8	23	0	22	5	32	-2	16	2	19	7	12	-4	22	2	23	14	35	9	25	5		49	21	
9.	40	26	36	4	39	2	41	15	37	11	34	15	33	14	30	6	30	9	31	17	41	17	41	14		47	21	
10.	32	12	30	5	32	5	26	1	27	13	33	10	25	-4	28	12	33	17	33	9	37	23	34	18		41	21	
11.	13	-2	6	-10	25	3	10	-4	18	-5	11	1	13	-11	1	-1	26	-2	18	-1	28	13	26	1		25	17	
12.	30	11	25	-1	30	-12	26	-4	35	-2	26	3	30	13	23	-9	26	4	21	-2	35	13	30	6		33	20	
13.	40	12	36	7	46	0	51	15	46	12	44	12	39	14	42	-8	41	12	39	16	39	18	52	14		50	24	
14.	42	15	39	14	40	15	42	21	44	24	43	21	38	18	50	12	46	15	48	16	35	13	46	29	47	57	29	
15.	35	14	31	4	41	9	34	13	51	12	31	20	33	8	33	15	42	17	37	22	44	19	45	15	36	23	50	27
16.	38	14	28	7	35	12	23	16	38	12	25	18	27	10	38	16	33	13	27	20	42	21	42	22	38	18	52	25
17.	34	8	27	4	38	-2	46	9	43	11	40	18	33	10	26	18	26	11	31	16	42	13	48	16	38	11	50	25
18.	38	13	32	12	32		35	23	37	13	31	20	30	18	42	11			30	25	39	23	36	22	41	27	47	32
19.	42	35	40	23	36	20	35	17	36	21	30	20	30	12	34	24			36	19	43	32	37	25	40	29	44	39
20.	48	24	36	13	45	8	33	8	50	19	40	18	40	13	28	20			28	13	38	23	46	21	34	16	47	28
21.	41	22	34	13	42	15	45	22	39	22	38																	



TABLE 3.—Maximum and minimum temperatures at selected stations, December, 1910. District No. 6—Continued.

Date.	South Dakota.						Colorado.						Nebraska.															
	Sioux Falls.		Watertown.		Yankton.		Denver.		Wray.		Alma.		Bridgeport.		Grand Island.		Hay Springs.		Hebron.		Lincoln.		North Platte.		Oakdale.		Omaha.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	26	-2	25	-2	27	3	55	19	37	15	36	8	42	12	35	10	40	10	32	12	29	11	37	11	26	6	27	10
2.....	22	8	34	12	37	18	60	34	65	16	42	13	55	16	43	18	57	13	40	14	38	18	54	15	36	11	35	18
3.....	30	10	28	13	32	13	55	34	50	33	42	26	38	20	35	21	47	17	37	29	34	23	43	27	27	15	33	21
4.....	25	10	19	9	24	13	49	34	58	21	32	21	49	22	26	19	25	17	29	21	26	19	27	18	23	15	27	19
5.....	26	12	22	9	25	12	44	22	40	14	24	21	32	15	24	19	20	12	28	22	28	19	26	9	23	8	28	23
6.....	27	0	30	-5	22	-1	54	22	58	11	31	-3	44	2	25	-6	35	-9	23	3	30	12	41	2	25	-4	23	16
7.....	25	0	18	-3	23	2	52	22	46	9	28	7	40	10	26	21	26	10	27	7	24	11	28	15	25	12	23	15
8.....	25	2	26	3	25	16	51	26	54	16	45	20	47	13	36	18	40	10	34	21	28	12	32	12	20	6	26	15
9.....	25	15	28	12	31	12	60	33	64	26	40	19	45	23	40	24	37	12	40	13	36	17	51	23	35	2	30	19
10.....	26	5	29	13	34	21	46	25	49	14	48	22	40	13	40	26	40	10	40	20	37	22	48	18	33	13	35	22
11.....	27	15	18	-3	21	7	41	28	42	23	46	31	34	26	34	30	32	24	34	25	30	22	43	26	25	9	27	18
12.....	27	20	28	-8	24	5	42	30	36	28	36	25	33	25	26	18	32	19	28	20	23	12	28	22	23	1	24	9
13.....	40	20	40	17	37	23	49	31	51	27	41	25	42	10	40	24	41	11	39	23	35	22	40	25	33	16	35	22
14.....	42	23	47	18	46	28	53	27	58	19	52	19	52	10	48	28	42	14	53	25	47	28	52	17	40	26	44	28
15.....	43	29	32	24	35	24	50	26	55	15	45	24	52	13	46	26	42	8	45	27	38	27	50	20	37	19	28	28
16.....	55	29	31	23	36	21	58	30	53	19	53	19	50	15	44	22	41	8	47	26	40	25	52	21	37	17	40	28
17.....	32	20	28	22	25	18	45	23	55	12	51	18	45	11	43	20	42	12	45	20	33	21	50	18	34	16	29	26
18.....	32	18	34	18	39	19	43	19	40	18	50	21	47	20	42	27	37	18	44	24	41	26	44	20	37	17	38	25
19.....	37	19	31	22	39	23	54	26	53	22	50	25	52	22	42	32	38	31	44	33	40	31	47	31	38	26	39	30
20.....	36	15	25	16	25	17	53	28	58	25	49	17	53	23	36	22	46	22	33	21	31	21	44	26	26	16	30	24
21.....	35	18	42	10	40	16	35	25	49	30	33	21	35	26	34	24	38	22	35	21	40	21	47	29	34	15	40	21
22.....	36	4	36	22	33	23	30	12	38	24	38	25	33	20	36	31	29	15	31	25	36	22	36	18	33	18	35	25
23.....	32	-7	24	-3	25	0	48	11	46	10	34	15	38	5	20	14	32	10	25	18	24	9	33	12	18	-1	25	8
24.....	34	2	17	-14	22	-2	54	29	55	16	36	13	49	20	32	10	45	23	32	9	32	7	49	20	23	-2	26	6
25.....	38	10	23	9	33	15	54	19	45	22	43	27	36	17	40	28	36	23	40	27	42	26	40	22	36	15	41	23
26.....	40	15	32	3	40	13	36	14	55	12	50	14	45	8	45	20	38	8	44	21	49	24	47	15	38	11	45	23
27.....	42	20	24	6	37	14	37	15	43	14	38	14	43	4	36	23	36	3	36	20	41	23	41	13	33	9	39	28
28.....	30	5	22	17	23	16	33	19	44	14	41	21	33	10	34	22	31	13	34	21	38	22	42	16	26	10	37	24
29.....	21	0	34	-3	25	4	36	11	38	8	38	17	40	8	30	18	32	1	30	20	28	18	37	14	26	8	27	18
30.....	40	10	34	1	38	8	52	21	56	6	46	16	50	15	44	22	42	11	38	18	44	20	42	16	30	18	42	22
31.....	32	8	29	-1	37	6	34	21	54	9	43	21	38	14	26	26	37	17	37	30	42	28	41	10	36	0	43	32
Means.....	32.5	11.4	28.4	8.3	31.0	13.1	46.5	23.7	50.1	17.5	41.5	18.8	42.7	14.9	35.7	21.2	37.3	13.4	36.3	20.7	34.6	20.0	42.3	18.1	30.4	11.2	33.4	20.8

Date.	Iowa.						Kansas.						Missouri.													
	Valentine, Nebr.		Clarinda, #		Sibley, #		Sioux City.		Colby.		Concordia.		Salina.		Topeka.		Wakeeney.		Columbia.		Kansas City.		St. Louis.		Unionville, #	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	34	4	18	9	26	2	25	4	37	9	35	15	34	10	33	15	36	14	32	14	33	15	30	16	30	9
2.....	47	18	35	9	30	2	31	15	62	13	42	14	41	12	39	19	45	13	36	13	40	20	33	18	36	8
3.....	36	15	19	17	28	15	30	15	50	34	40	27	44	11	43	26	48	35	47	23	47	25	45	29	43	12
4.....	19	15	26	16	24	14	28	13	51	19	27	23	36	26	28	24	41	21	32	20	30	23	31	24	28	13
5.....	20	1	31	15	29	18	27	21	45	15	28	18	28	24	31	25	40	19	32	27	31	25	33	26	32	18
6.....	35	0	26	19	23	8	21	12	58	3	26	8	30	6	29	19	50	2	31	19	30	22	29	22	30	13
7.....	27	8	12	12	22	1	20	7	40	10	27	13	25	10	30	15	40	13	34	19	31	20	38	19	28	12
8.....	37	7	19	2	24	2	26	15	53	15	35	21	30	8	32	12	54	14	37	12	29	15	36	23	30	9
9.....	42	15	31	7	27	18	26	19	68	24	47	14	58	10	40	13	57	28	43	12	41	16	44	25	34	7
10.....	37	19	39	16	37	13	30	22	52	24	40	29	60	20	44	29	55	28	43	24	44	27	45	34	44	15
11.....	31	16	32	19	27	2	26	12	55	28	40	31	44	28	38	30	45	33	37	24	36	30	37	26	34	18
12.....	28	19	19	6	27	6	21	3	40	26	31	27	38	30	31	22	36	26	28	14	30	18	26	16	25	4
13.....	41	23	22	6	40	4	37	21	40	25	42	25	36	26	40	17	42	26	36	10	38	15	36	17	34	4
14.....	46	21	47	19	51	19	44	26	58	22	56	30	56	24	53	26	58	21	48	20	51	28	48	21	50	8
15.....	46	18	34	20	31	19	32	24	57	12	48	29	45	26	45	28	48	20	44	22	44	32	42	33	40	24
16.....	40	18	45	26	31	26	38	27	52	22	50	27	60	23	53	25	55	21	49	17	51	28	45	28	46	14
17.....	44	17	35	21	29	26	26	22	50	16	49	22	46	20	41	26	53	20	51	27	40	28	54	32		



**Climatological Data for December, 1910.**  
**DISTRICT No. 7, LOWER MISSISSIPPI VALLEY.**

ISAAC M. CLINE, District Editor.

**GENERAL SUMMARY.**

Temperature conditions were generally moderate during the first few days of the month. From the 6th to 8th a cold wave overspread the district, giving frost to the Gulf coast and minimum temperatures below 20° as far south as northern Louisiana. From the 9th to 11th moderate temperatures were general, but from the 12th until the 15th another cool period prevailed. Seasonable temperatures were general from the 18th to 22d, followed by another marked cool period on the 23d and 24th. From the 25th to 28th, unseasonably warm weather prevailed, but on the closing days of the month a cool wave occurred, giving freezing as far south as central Louisiana and frosts to the Gulf Coast.

Periods of precipitation were not well defined, and it is not possible to generalize the periods for the district as a whole. In the Colorado area there were four periods of light precipitation, as follows: 3d-4th, 20th-22d, and 25th to 28th. Over the New Mexico area there was practically no precipitation during the first 13 days of the month, but during the last 18 days there were three periods of light scattered precipitation, namely: 14th, 20th-21st, and 26th to 29th. In the Texas area there were three periods of precipitation: 12th to 14th, 20th to 23d, and 28th to 30th. In Oklahoma and the Kansas area, precipitation occurred generally during four periods, as follows: 4th-5th, 13th-15th, 21st, and 27th to 30th. In the Missouri and Tennessee areas there were three periods of precipitation, namely: 4th to 6th, 21st to 23d, and 27th to 30th. In Arkansas there were four periods of general precipitation: 4th to 6th, 12th to 15th, 22d and 23d, and 26th to 30th. Over Louisiana and in the Mississippi area the periods were ill defined, and some precipitation occurred at one or more stations on every day of the month, except the 1st and 25th. The precipitation was light, as a rule, being below the normal, except in some localities in Louisiana and southern Arkansas. Over Oklahoma, Kansas, eastern Colorado, northeastern New Mexico, and northwestern Texas the amounts of precipitation were very small, and some localities received no rain. In those localities the drought was severe at the close of the month and farming operations were being materially interfered with.

**TEMPERATURE.**

Mean temperatures for the month were from 0.1° to 3.9° above the the normal generally to the west of the 95th meridian, but east of this meridian there was a general deficiency ranging from 0.2° to 5.2°, except in Louisiana, where there was a small excess at the majority of the stations. The maximum temperatures reached, or exceeded, 75° in all States and areas, and 80°, or higher, was recorded in many localities, except in the Missouri and Tennessee areas, where the highest temperatures recorded were 67° and 70°, respectively. The highest temperatures were experienced in Oklahoma and Louisiana and in the Colorado and Texas areas. The highest recorded was 85°, at Hoehne, Colo., and Donaldsonville, La. Minimum temperatures for the month were generally below freezing, except on the immediate Gulf Coast, where they were near 35°. The lowest temperatures were below 20° in portions of Mississippi and northern Louisiana, while over the remainder of the district they were generally below 10°, and in the mountainous parts of the Colorado and New Mexico areas they were generally below zero. The lowest temperature recorded during the month

was -8°, at Hoehne, Colo., and Elizabethtown, N. Mex., and a minimum of -5° occurred at Ironton, Mo. As a whole, temperature conditions during the month were moderate and outdoor occupations were not interfered with to any appreciable extent by severe cold. Monthly mean temperatures and departures from the normal for the various States and parts of States are reported as follows: Colorado area, 31.2°, +3.1°; New Mexico area, 35.5°, +2.2°; Texas area, 40.6°, -0.3°; Kansas area, 34.2°, +0.3°; Oklahoma, 39.6°, -0.1°; Missouri area, 34.1°, -1.8°; Tennessee area, 37.1°, -3.7°; Arkansas, 40.8°, -1.7°; Mississippi area, 44.5°, -2.6°; Louisiana, 52.2°, +0.4°.

**PRECIPITATION BY DRAINAGE AREAS.**

*Arkansas River and tributaries.*—Less than the normal amount of precipitation occurred throughout this drainage area, except in scattered localities in Colorado and Arkansas. The amounts of precipitation and departures from the normal for the several valleys of this basin differ materially. Over the headwaters of the Arkansas River, in Colorado, the average from 33 stations was 0.55 inch, being about 0.2 inch below the normal. The precipitation was exceptionally light over those portions of the Arkansas Valley proper that lie in Kansas and Oklahoma and also over the Cimarron and Canadian valleys. The average from 38 stations in that portion of the Arkansas Valley proper in Kansas and Oklahoma was 0.41 inch, being 0.6 inch below the normal. The average from 17 stations in the Cimarron Valley was 0.12 inch, and the deficiency amounted to about 0.7 inch. Over those portions of the Canadian Valley that lie in New Mexico and Texas the average from 42 stations was 0.11 inch, being about 0.4 inch below the normal. Over that portion of this valley that lies in Oklahoma, the average from 20 stations was 0.20 inch and the deficiency amounted to 1.4 inch. The precipitation was somewhat heavier over the Verdigris and Neosho valleys. The average from 9 stations in the Verdigris Valley was 0.93 inch, being about 0.3 inch below the normal, and the average from 17 stations in the Neosho Valley was 1.0 inch, being about 0.8 inch below the normal. Over that portion of the Arkansas Valley below the Oklahoma-Arkansas line the precipitation was unevenly distributed, the average from 14 stations being 3.06 inches, about 0.8 inch below the normal.

*Red River and tributaries.*—There was less than the normal amount of precipitation generally over those portions of the Red River Valley that lie in New Mexico, Texas, and Oklahoma, where the amounts from 41 stations averaged 1.02 inch, being about 0.6 inch below the normal. Over that portion of the Red River Valley below the Texas-Arkansas line the precipitation was uniformly distributed, the average from 16 stations being 4.62 inches, about the normal amount.

*Mississippi south of St. Louis and small tributaries.*—Less than the normal amount of precipitation occurred over this drainage area, except in scattered localities. In the immediate Mississippi Valley, the amounts from 41 stations averaged 3.39 inches, being about 0.6 inch below the normal. The precipitation averaged about 1.50 inch over the Meramec and the average deficiency was about 1.0 inch. Over the White River Valley, the average from 19 stations was 2.73 inches, being about 0.6 inch below the normal. The precipitation was uniformly distributed over the Yazoo and Big Black Valleys; the average from 30 stations in the Yazoo Valley was 3.63 inches, being about 1.0 inch below the



normal, and the average from 4 stations in the Valley of the Big Black was 3.48 inches, the deficiency being about 1.3 inch. The precipitation was unevenly distributed over the Ouachita Valley, some localities reporting more than 1 inch excess and others more than 1 inch deficiency; the average from 20 stations was 4.31 inches, about the normal amount.

*Louisiana coastal plain.*—Moderate to heavy rains fell generally over this area, the average from 27 stations being 4.15 inches, about 0.5 inch below the normal. The greatest excess was 2.88 inches and the greatest deficiency was 2.62 inches.

Monthly precipitation and departures from the normal for the various States and parts of States are reported as follows: Colorado area, 0.55, -0.23; New Mexico area, 0.14, -0.37; Texas area, 1.26, -0.53; Kansas area, 0.54, -0.36; Oklahoma, 0.36, -1.01; Missouri area, 1.96, -0.76; Tennessee area, 3.85, -0.53; Arkansas, 3.57, -0.45; Mississippi area, 3.69, -1.17; Louisiana, 4.30, -0.45.

#### SNOWFALL.

Snow occurred generally over the district to the north of the 34th parallel. In the Tennessee and Missouri areas, and in northeastern Arkansas, the amounts were quite large, ranging generally from 5 to 8 inches, but the snow soon disappeared, and at the close of the month there was none on the ground. In Oklahoma and the Kansas and Texas areas, and the eastern portions of the Colorado and New Mexico areas, the amounts were generally small, ranging from a trace to 3 inches, except that there was 3 to 7 inches over the northeastern portion of the Kansas area. In the mountains of Colorado, the season's snowfall up to December 31 was much less than for the corresponding period last year, and as a whole, much less than the normal. In a few localities on the different watersheds, nearly the average amount of snow occurred, but the areas thus favored were too small to make up for the general and marked deficiency in the water stored for late irrigation. The snow is generally unpacked and owing to the absence of high winds, there has been but little drifting into the gulches. Over the New Mexico area the snowfall was much lighter than usual, and considerably less than in 1909. The warm weather left the mesas and lower mountains generally bare until the 26th and 27th, when snow occurred generally, but it was light, except in the higher mountain districts. The present outlook for water for irrigation is not very promising, because the light winds have been unfavorable for drifting into the canyons, and the warm weather has dissipated a large part of that which has fallen. The average snowfall, in inches, for the various States and areas, derived from such stations as reported snow, is as follows: Colorado area (30 stations), 9.5; New Mexico area (35 stations), 1.9; Texas area (6 stations), 0.2; Kansas area (52 stations), 1.2; Oklahoma (23 stations), 0.2; Missouri area (22 stations), 4.1; Tennessee area (10 stations), 2.0; Arkansas (34 stations), 1.3; Mississippi area (17 stations), 0.2.

75892-11-6

#### RIVERS.

In Oklahoma all streams were at unusually low stages at the close of the month. The Canadian continued dry over a considerable portion of its bed and many of the small streams in the central and western portions of the State have been dry for six weeks to two months.

Only slight changes occurred in the Red River and low stages prevailed generally at the close of the month. No material changes occurred during the month in the Arkansas. At Little Rock the water fell to the unprecedented low stage of 0.9 foot below zero. The stage was below zero until the 29th, when a rise set in and on the 31st, the stage was 2.0 feet above zero. At Pine Bluff a stage of 6.6 feet was reached at the close of the month. Navigation was suspended, except that on the last two days of the month light draft boats came up the river as far as Robb Roy Bridge near Pine Bluff.

Low stages prevailed in the White River during the first and second decades, but there was a rise at Clarendon during the third decade and a stage of 12.6 feet was recorded on the 31st. The lower White was navigable during the greater part of the month.

With the exception of a rise of 8 feet at Camden on the last day of the month, the Ouachita was low and nearly stationary throughout the month.

Below St. Louis the Mississippi rose at Memphis until the 16th; Helena until the 17th; Arkansas City until the 19th; Vicksburg until the 21st; Natchez until the 25th; and at New Orleans until the 29th. The rises were slight and comparatively low stages prevailed generally at the close of the month.

#### NOTES.

*New Mexico* (Chas. E. Linney, Section Director).—The weather during the month was the driest of record, there being no precipitation at many stations in the east portion.

*Tulia, Tex.*—Dry weather prevailed and as a result prospects for wheat are poor.

*Wichita, Kans.* (Richard H. Sullivan, Local Forecaster).—The only precipitation of consequence during the month was 0.58 inch on the 27th. The year was the driest on record with 17.72 inches; the least amount previously recorded being 18.19 inches in 1893.

*Frederick, Okla.*—There is not much moisture in the ground and very little preparation has been made for spring planting.

*Hobart, Okla.*—Very little winter wheat has survived the drought and a large acreage will be plowed under and planted in cotton. Stock water has given out, except in a few sections and many wells are dry.

*Blackburn, Okla.*—Rain is badly needed; live stock is suffering in some localities.

*Oklahoma* (J. Pemberton Slaughter, Section Director).—The long continued drought has greatly damaged the wheat crop; the acreage has been reduced and the stand is probably the poorest in the history of the State.



## MONTHLY WEATHER REVIEW.

DECEMBER, 1910

TABLE 1.—Climatological data for December, 1910. District No. 7, Lower Mississippi Valley.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
<b>Colorado.</b>																				
Blaine.	Baca.	3,935	18	34.8	+ 1.8	70	9	9	23†	51	T.	- 0.62	T.	T.	0	12	11	8	nw.	M. M. Myers.
Buena Vista.	Chaffee.	7,955	10	28.7		55	19	0	30	43	0.92	+ 0.50	0.40	12.0	3	22	5	3	nw.	A. C. Short.
Calhan.	El Paso.	6,700	3	30.6		56	9	2	23	41	0.54		0.33	10.0	2	23	6	3	sw.	H. B. Rice.
Canon City.	Fremont.	5,343	22	38.0	+ 0.7	65	9	14	23	40	0.19	- 0.24	0.19	1.0	1	25	3	3	n.	G. C. Sherwood.
Colorado Springs.	El Paso.	6,098	30	32.6	+ 2.0	62	2	1	23	45	0.25	0.00	0.18	2.6	3	21	4	6		Colorado College.
Cripple Creek.	Teller.	9,396	9								0.66	+ 0.21	0.36	15.0	4					F. G. Willis.
Cuchara Camps.	Huerfano.	8,200									0.66		0.31	6.5	4	18	11	2	sw.	George A. Mayes.
Eads.	Kiowa.	4,209	3								1.06		0.36	14.2	4	15	15	1	ne.	W. H. Lauck.
Fairview.	Custer.	9,500	1																	Elizabeth L. Gray.
Florence.	Fremont.	5,185	1																	W. G. Fish.
Fremont Ex. Station.	El Paso.	8,850		28.6		52	1†	2	28	36	0.61		0.20	11.9	7	15	11	5	w.	U. S. Forest Service.
Garfield.	Chaffee.	9,510									1.78		0.65	24.0	7	21	4	6		Lloyd N. Felton.
Glen Eyrie.	El Paso.	6,500	18																	Calixto Bertolotti.
Hamp.	Elbert.	5,400	17	31.6	+ 3.8	62	9	4	23	46	0.27	- 0.14	0.24	0.5	3	19	4	8	n.	W. Hamp.
Hermit Lake.	Custer.	10,000									1.63		0.42	35.0	6	10	15	6	sw.	John E. Graham.
Hochus.	Las Animas.	5,700	18	39.4	+ 9.1	85	4†	3	23†	78	0.02	- 0.75	0.02	1.0	1	14	12	5	sw.	S. W. De Busk.
Holy.	Prowers.	3,380	15	35.6	+ 3.5	67	26	7	6†	52	0.00	- 0.41	0.00	0.0	0	20	8	3	se.	Holly Sugar Co.
La Junta.	Otero.	4,052									0.00		0.00	0.0	0	24	1	6	e.	Fred. B. Mason.
Lake Moraine.	El Paso.	10,265	16	24.9	+ 3.1	48	15	- 8	29	45	1.11	+ 0.45	0.42	19.6	6	10	10	11	sw.	Clyde C. McReynolds.
Lamar.	Prowers.	3,592	20	34.9	+ 2.1	62	3	3	30	51	T.	- 0.57	T.	T.	0	25	4	2		J. T. Lawless.
Las Animas.	Bent.	3,899	42	33.6	+ 4.1	63	5†	4	30	55	0.00	- 0.36	0.00	0.0	0	20	2	9	e.	F. M. Tague.
La Veta Pass.	Costilla.	9,000									0.77		0.29	14.7	5	19	9	3	w.	Marine D. Wright.
Leadville.	Lake.	10,245	14	21.4	+ 1.9	44	2	- 6	29	37	1.15	+ 0.08	0.29	30.7	10	9	14	8	n.	Joseph Lindsey, Jr.
Limon (near).	Elbert.	5,360	3	32.0		63	9	4	23	44	0.17		0.13	T.	2	19	7	5	s.	F. L. Palmer.
Madrid.	Las Animas.										0.12		0.12	3.0	1					Thomas Sawyers.
Marshall Pass.	Saguache.	10,846	7								0.62		0.50	6.5	2	22	8	1	nw.	William D. Lillard.
North Lake.	Las Animas.	8,700																		



Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast days.
<b>Texas—Continued.</b>																			
Denison.	Grayson.		2															E. B. Wilson.	
Finley.	Bowie.																	Mrs. M. C. Myers.	
Henrietta.	Clay.	915	18	42.1	- 2.2	75	17	15	4†	45	3.20	- 0.35	2.00	0.0	2	10	4	C. K. Brown.	
Hereford.	Deaf Smith.	3,750	5	39.8		74	10	9	23	54	0.15		0.15	0.0	1	19	12	A. C. Elliott.	
Lewis Ferry.	Bowie.		1								4.88		2.00	0.0	6			P. G. Ruff.	
Memphis.	Hall.	2,067	5	38.0		58	19†	13	31	41	T.		T.	0.0	0	5	21	Ft. Worth & Denver Cy Ry	
Miami.	Roberts.	2,743	4	39.6		65	16	10	23	45†	0.02		0.02	T.	1	14	13	J. E. Kinney.	
Mobeetie.	Wheeler.		16								0.00	- 0.63	0.00	0.0	0	12	14	R. A. Choate.	
Nazareth.	Castro.		4															Rev. P. A. Kaelin.	
Ochiltree.	Ochiltree.		2															S. J. Allen.	
Pampa.	Gray.	3,226	1															B. E. Finley.	
Paris.	Lamar.	592	21	44.0	- 2.1	71	27	20	7	41	2.22	- 0.16	0.85	0.0	6	13	4	Robert A. Miller.	
Plemons.	Hutchinson.		3	36.8		68	9	7	6†	49	T.		T.	0.0	0	20	5	C. S. Solomon.	
Quanah.	Hardeman.	1,563	5	43.2		65	19†	21	6	37	0.30		0.30	0.0	1	21	2	Wm. H. Crawford.	
Ringo Crossing.	Hopkins.										4.62		2.71	0.0	4	11	0	J. H. Palmer.	
Romero.	Hartley.			37.8		72	9	11	23	52	T.		T.	0	7	19	5	R. S. Chamberlain.	
Sherman.	Grayson.	745	17															R. A. Gibbs.	
Sulphur Springs.	Hopkins.	530	18															O. M. Pate.	
Texline.	Dallam.	4,694	5					4	30		0.05		0.05	0.5	1	15	10	Ft. Worth & Denver Cy Ry.	
Tulia.	Swisher.	3,501	12	38.5		75	9	9	6	55	0.36	- 0.65	0.21	1.0	3	13	14	Lou Muhall.	
Winfield.	Titus.										6.24		4.00	0	6	12	9	J. C. Bostick.	
<b>Kansas.</b>																			
Alden.	Rice.	1,684									0.36		0.36	T.	1	16	0	L. B. Wait.	
Anthony.	Harper.	1,329	13	35.8		61	16	11	7	42	0.20	- 0.65	0.17	T.	2	11	9	R. H. Beebe.	
Ashland.	Clark.	1,951	22	36.2	+ 0.6	66	9	3	30	53	0.28	- 0.35	0.00	0.2	5	15	10	C. W. Carson.	
Burlington.	Coffey.	1,010	17	32.8	- 1.4	53	14†	9	8	36	1.34	- 0.01	0.13	2.5	3	9	12	O. E. Sanford.	
Chanute.	Neosho.	940	6	33.0		56	27	12	2	38	1.13		0.67	3.5	3	13	12	Chase W. Brown.	
Cimarron.	Gray.	2,700	4	33.84		65	9	4	6†	49	0.15		0.10	T.	2	12	12	Fred Mallonee.	
Coldwater.	Comanche.	2,090	13	36.04	+ 1.0	65	10	9	6	46	0.32	- 0.36	0.20	1.0	3	19	3	J. L. Stanley.	
Columbus.	Cherokee.	898	20															O. E. Skinner.	
Coolidge.	Hamilton.	3,348	13	32.4	+ 1.1	62	16	5	6	51	0.00	- 0.29	0.00	0	0	22	8		



TABLE 1.—Climatological data for December, 1910. District No. 7, Lower Mississippi Valley—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast days.	Prevailing wind direction.
Oklahoma—Continued.																				
Fairland	Ottawa	839	11	37.8	- 0.2	61	27	12	2	30	0.95	- 0.89	0.32	1.0	5	15	5	11	s.	C. W. Prier.
Fort Gibson	Muskogee	556	6								0.75		0.44	0.0	5	16	4	11	e.	John T. Welsh.
Frederick	Tillman	1,293	7	42.5		67	27	12	30	41	0.40		0.27	0.0	3	18	6	7	n.	B. B. Bradley.
Gage	Ellis	2,136	8	36.2		90	12	8	6	53	0.10		0.10	T.	1	26	5	0	n.	C. H. Holmes.
Goodwell	Texas	3,300	3	38.2		72	9	12	1	54	0.03		0.03	0.0	1	22	3	3	n.	S. W. Black.
Guthrie	Logan	1,000	8																	Geo. W. Derrick.
Guymon	Texas	3,133	1								0.28		0.28	0.0	1				sw.	A. L. Mordt.
Harrington	Roger Mills	2,200	7	39.8		68	9	14	6	45	0.00		0.00	0.0	0	12	6	13	nw.	T. Compton.
Hartshorne	Pittsburg	700	12	42.7	- 2.7	68	17	16	2	46	0.83	- 1.38	0.65	0.0	2	17	4	10	n.	Edward Glendenning.
Healdton	Carter	900	17	42.0	- 0.6	71	27	14	7	46	1.57	- 0.95	0.73	0.0	4	14	13	4	s.	C. H. Heald.
Helena	Alfalfa	1,396	3	37.4		64	16	7	7	45	0.23		0.20	T.	2	19	7	5	n.	Frank Horsfall.
Hennessey	Kingfisher	1,166	16	41.2	+ 1.8	62	37	12	1	46	T.	- 1.06	T.	0.0	0	15	16	0	s.	W. W. Parks.
Hobart	Kiowa	1,396	7	41.6		63	27	12	30	38	0.05		0.03	0.0	2	10	16	5	n.	Roy Benedict.
Holdenville	Hughes	900	10	40.5	- 0.3	67	17	17	2	39	0.40	- 1.31	0.40	0.0	1	20	4	7	n.	Miss M. Rutherford.
Hooker	Texas	2,999	5	35.4		73	9	4	6	56	0.03		0.03	0.0	1	16	5	10	s.	H. N. Kelley.
Hurley	Cimarron	3,600	2	32.6		65	2	3	23	50	T.		T.	0	15	13	3	3	sw.	C. W. Meyers.
Idabel	McCurtain	474	3																	M. L. Henderson.
Jefferson	Grant	1,062	17	34.6	- 2.9	61	16	10	6	49	0.30	- 0.59	0.30	0.0	1	19	6	6	s.	T. E. Beck.
Kenton	Cimarron	4,000	11	37.4	+ 2.0	68	27	7	23	47	T.	- 0.37	T.	0	19	5	7	n.	L. A. Wilkoff.	
Kingfisher	Kingfisher	1,046	13	40.0	+ 0.5	63	16	10	30	40	0.22	- 0.69	0.16	T.	2	19	9	3	n.	J. C. Cross.
McAlester	Pittsburg	698	18	43.8		70	17	20	2	39	0.84	- 1.77	0.75	0.0	3	15	5	11	n.	Wm. Noble.
McComb	Pottawatomie	1,200	16	43.5	+ 3.3	65	10	13	30	44	0.00	- 1.82	0.00	0.0	0	6	19	5	n.	Jas. E. McNair.
Mangum	Greer	1,585	18	41.0	- 1.1	68	27	12	7	48	T.	- 1.04	T.	0.0	0	19	6	6	ne.	M. J. Northcutt.
Marlow	Stephens	1,292	10	41.2	+ 1.0	67	19	15	6	39	0.23	- 0.78	0.13	0.0	2	19	2	10	n.	W. B. Anthony.
Meeker	Lincoln	1,030	17	37.7	- 2.0	78	18	13	2	43	0.00	- 1.73	0.00	0.0	6	17	0	14	n.	Dr. J. B. Baugh.
Muskogee	Muskogee	614	12	40.5	- 0.2	67	17	15	2	38	0.98	- 0.83	0.73	T.	2	9	2	20	n.	Prof. E. N. Collette.
Mutual	Woodward		4	37.7		66	16	10	1	49	0.00		0.00	0.0	0	20	3	8	s.	Thos. Martin.
Neola	Caddo	1,500	5	40.1		65	18	11	30	44	T.		T.	0	19	8	4	s.	R. N. Schooling.	
Newkirk	Kay	1,149	14	38.4	+ 1.2	60	16	12	1	35	0.28	- 0.93	0.28	0.0	1	20	7	4	n.	P. H. Albright & Co.
Norman	Cleveland	1,171	17																	Walter H. Meier.
Oakwood	Dewey	1,854	7	38.2		61	24	7	30	45	0.03		0.03	T.	1	20	6	5	n.	Dr. F. P. Osborn.
Okeene	Blaine	1,194	7	39.4		63	16	12	6	46	0.04		0.04	T.	1	22	5	4	s.	Dr. L. H. Murdoch.
Oklahoma	Oklahoma	1,247	21	39.8	+ 1.2	64	27	14	6	34	0.03	- 1.71	0.03	T.	1	18	9	4	s.	U. S. Weather Bureau.
Okmulgee	Okmulgee	732	8																	J. L. Maynard.
Pauls Valley	Garvin	880	11																	A. M. Foss.
Pawhuska	Osage	918	12	38.1	- 1.0	76	26	10	30	55	0.12	- 1.37	0.07	0.5	2	17	9	5	nw.	R. C. Block.
Perry	Noble	1,060	13	39.4	- 0.8	63	27	13	6	37	0.08	- 1.06	0.08	T.	1	21	4	6	n.	J. A. Douglass.
Ravla	Johnston	796	9	43.0		69	10	15	2	40	1.69		0.90	0.0	3	18	7	6	n.	R. G. Gupitt.
Sac and Fox Agency	Lincoln	900	18	41.0	+ 0.8	65	27	15	30	41	0.05	- 1.99	0.05	0.0	1	22	4	5	n.	D. B. Taylor.
Shawnee	Pottawatomie	1,041	10	38.0	+ 1.0	65	17	15	30	39	0.15	- 0.89	0.12	0.0	2	14	8	9	nw.	Neal R. Clark.
Snyder	Kiowa	1,356	4	42.6		66	27	11	30	45	0.15		0.14	0.0	2	18	10	3	se.	Dr. W. G. Woodard.
Stillwater	Payne	880	18	37.2	- 0.9	66	27	4	31	47	T.	- 1.24	T.	0.0	0	16	8	7	n.	J. M. Speidel.
Supply	Woodward	2,100	3																	A. H. Trumbo.
Tulsa	Tulsa	700	22	38.8		63	27	13	30	43	0.16	- 1.57	0.12	T.	2	20	5	6	s.	Wm. Hall.
Vinita	Craig	698	7																	C. E. Lohman.
Wagoner	Wagoner	588	14	38.6	- 0.7	64	17	13	2	40	0.48	- 1.05	0.35	1.0	3	21	1	9	n.	S. L. Hatfield.
Waukomis	Garfield	1,258	14	38.6	- 1.0	62	19	8	30	42	0.06	- 0.83	0.06	T.	1	25	2	4	n.	R. C. Shadens.
Waurika	Jefferson	988	10	43.8		71	27	19	6	36	1.18		0.50	T.	4	19	5	7	n.	B. A. Swindler.
Wetford	Custer	1,639	9	39.4	+ 1.0	64	10	14	6	46	0.05	- 0.49	0.03	T.	2	16	6	9	n.	M. D. Reed.
Webbers Falls	Muskogee	479	12	37.6	- 4.0	64	27	11	9	49	0.08	- 0.09	1.98	0.0	2	8	16	7	e.	B. D. Boulineau.
Whiteagle	Kay	945	5	39.2		68	31	12	30	48	T.		T.	0.0	0	23	2	6	n.	J. M. Dankwardt.
Woodward	Woodward	1,886	1	36.6		64	9	7	6	52	0.01		0.01	T.	1	22	7	2	s.	R. A. Boyle.
Missouri.																				
Belle	Marion	1,200	18	32.2	- 1.6	60	17	9	21	42	0.70	- 1.65	0.60	T.	2	13	9	9	n.	A. J. Wofford.
Birch Tree	Shannon	305	17	34.3	- 1.6	56	28	14	6	36	2.34	- 0.25	0.90	0.0	6	21	3	7	s.	V. H. Kirkendall.
Cape Girardeau	Cape Girardeau		20	37.2	- 2.2	66	28	14	21	35	5.38	+ 1.21	2.85	7.0	4	3	10	e.	D. L. Albert.	
Caruthersville	Pemiscot		11	36.2	- 1.9	65	17	10	2	47	0.87	- 1.33	0.42	T.	4	22	1	8	n.	H. E. Averill.
Dean	McDonald		440	35.2		60	27	14	21	33	1.70		0.90	4.0	5	14	4	11	n.	H. E. Dean.
Doniphan	Ripley	889	3																	W. W. Martin.
Farlington	St. Francois		900	32.2		57	17	9	24	31	1.59		0.67	4.8	3	20	3	8	nw.	Miss Carrie Sneed.
Gano	Dent		3	32.5		59	17	1	24	42	1.93		0.71	0.8	5	20	0	11	n.	A. C. Leach.
Goodland	Iron		16	33.8	- 2.1	63	28	- 1	7	44	2.29	- 0.51	1.03	5.0	6	17	11	3	n.	F. M. Adams.
Greenville	Wayne		1,000	32.2		55	27	- 5	7	40	2.25	- 0.76	1.00	6.5	6	12	7	12	nw.	A. G. Templeton.
Hollister	Taney		458	34.6	- 1.8	63	28	- 4	7	34	2.24	- 1.09	0.98	8.2	5	15	5	11	n.	W. P. Chapman.
Ironton	Iron		979	32.0		67	17	17	1	36	0.48	- 1.82	0.37	0.1	3	21	0	10	se.	W. P. Delano.
Jackson	Cape Girardeau		911	36.6		57	17	15	13	30	2.84	- 0.23	0.98	5.5	7	16	7	8	se.	L. M. Bean.
Koplin	Oregon	964	30	33.6	- 1.8	57	25	14	2	37	0.59	- 1.49	0.28	0.5	3	16	4	11	sw.	Miss Juliette Derrin.
Koshkonong	Barton		420	33.0	- 2.7	55	19	0	7	39	3.65	+ 0.40	0.95	4.0	6	15	10	6	s.	J. W. Hitt.
Lamar	Bollinger																			



TABLE 1.—Climatological data for December, 1910. District No. 7, Lower Mississippi Valley—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast days.	Prevailing wind direction.
Arkansas.																				
Alicia.	Lawrence.	6	6																McCullough & Guelck.	
Amity.	Clark.	250	18	42.4	- 0.7	67	18	12	7	45	5.15	+ 1.28	3.75	T.	8	16	6	9	sw.	Prof. S. M. Samson.
Arkadelphia (near).	do.	250	3	44.5		72	28	17	7	34	4.44		2.05	0.0	7	12	6	13	sw.	J. A. Ross.
Arkansas City.	Desha.	145	27								3.91	- 0.38	1.64	0.0	8					W. C. Blundell.
Batesville.	Independence.	271	7								2.94		1.82	1.0	6					Lella I. Teter.
Bee Branch.	Van Buren.	18	18	40.4	- 2.9	66	10	16	21	38	3.65	+ 0.17	2.10	0.5	6	18	0	13		J. E. Scanlan.
Benton.	Saline.	283	3	43.6		70	28	20	21	38	5.00		3.30	0.0	3	15	5	11	n.	J. E. Evans.
Bentonville.	Benton.	1,303	5	36.8	- 0.7	62	17	15	2	36	0.89	- 1.87	0.34	1.2	6	18	5	8	s.	U. S. Weather Bureau.
Bergman.	Boone.	1,324	14	32.7	- 4.8	61	17	9	7	44	1.39	- 1.13	0.45	1.5	7	18	4	9	nw.	John T. Maxey.
Black Rock.	Lawrence.	26	6								3.17		1.39	0.5	6					S. J. Howe.
Brinkley.	Monroe.	226	24	30.3	- 5.0	66	28	15	21	42	5.29	+ 0.73	2.08	0.5	7					H. L. D. Whitson.
Calico Rock.	Izard.	361	6								2.58		0.80	0.0	5					W. H. Stoner.
Camden.	Ouachita.	158	25	45.4	- 0.4	75	28	14	7	38	4.14	- 0.40	1.78	0.0	10	12	2	17	nw.	R. H. Quarterman.
Centerpoint.	Howard.	10	10	45.0	- 0.3	73	28	16	7	38	6.00	+ 1.51	3.30	0.0	4	10	7	14	ne.	J. M. Huddleston.
Clarendon.	Monroe.	171	6								5.15		2.47	0.1	7					Mrs. B. E. Bishop.
Conway.	Faulkner.	309	27	39.8	- 2.6	68	28	17	2	34	4.37	+ 0.47	2.99	0.2	6	11	12	8	se.	G. H. Burr.
Corning.	Clay.	293	18	37.0	- 0.8	65	28	13	7	34	3.38	- 0.16	1.85	7.2	8	13	7	11	nw.	Jacob Brobet.
Dardanelle.	Yell.	330	24	46.6		64	10	15	21	39	2.62	- 0.51	1.20	0.0	7					A. Bernard.
Dodd City.	Marion.	1,175	29	35.5	- 4.0	62		12		36	1.93	- 1.07	0.95	5.0	5					Neal Dodd.
Dutton.	Madison.	9	9																	E. M. Mize.
Earl.	Crittenden.	4	4																	W. J. Moss.
El Dorado.	Union.	265	6	44.2		74	28	18	7	37	3.92		1.79	0.0	11					Jeff J. Babb.
England.	Lonoke.	4	4	41.6		68		16		34	4.39		1.95	T.	3					J. C. Chenault.
Eureka Springs.	Carroll.	9	9	37.2		62	9	15	2	41	0.84		0.33	0.5	3	7	17	7	sw.	S. H. Britta.
Fayetteville.	Washington.	1,451	21	38.8	- 0.6	63	17	15	2	40	0.75	- 2.06	0.50	0.5	3	13	4	14	sw.	University of Arkansas.
Fort Smith.	Sebastian.	481	28	41.5	- 0.2	65	27	21	7	30	0.59	- 2.29	0.31	T.	5	13	7	11	e.	U. S. Weather Bureau.
Fulton.	Hempstead.	264	6								5.16		2.00	0.0	8					B. C. Logan.
Hardy.	Sharp.	643	12	37.7	- 4.9	60	28	15	14	35	4.09	+ 0.80	1.52	8.0	7	8	11	12	nw.	C. A. Caywood.
Helena.	Phillips.	182	25	40.4	- 4.7	64	10	16	21	36	2.98	- 2.06	1.10	T.	6					B. F. Modisett.
Hot Springs.	Garland.	600	4	42.8		67	28	16	2	36	5.39		3.22	0.0	4	12	12	7	n.	Hot Springs Water Co.
Huttig.	Union.	85	3	45.6		75		17		35	4.37		1.75	0.0	8					C. A. Berry.
Jonesboro.	Craighead.	345	15	37.6	- 3.4	70	28	15	14	40	4.26	- 0.30	2.00	2.4	6	4	7	20	nw.	Benedictine Sisters.
Junction.	Union.	17	17	47.0	+ 1.4	71	29	17	7	34	2.23	- 1.80	1.50	T.	3	7	4	20	n.	J. A. Lowerback.
Lake Farm.	Jefferson.	195	3	40.4		66	18	11	21	44	5.43		3.42	T.	5	11	9	11	s.	R. H. Gillispie.
Lewisville.	Lafayette.	262	7	46.9		73		18		36	4.14		2.00	0.0	8					F. W. Youmans.
Little Rock.	Pulaski.	357	31	42.3	- 1.2	68	28	23	7	27	5.40	+ 1.16	3.48	T.	7	13	3	15	nw.	U. S. Weather Bureau.
Lutherville.	Johnson.	775	13	39.2	- 1.7	65	10	17	7	34	2.09	- 1.59	1.10	0.0	4	15	8	8	sw.	G. H. Hentschel.
Malvern.	Hot Spring.	277	23	43.0	- 1.1	68	28	18	7	33	5.22	+ 1.30	2.10	T.	10					Miss L. C. Smith.
Mammoth Spring.	Fulton.	6	6	34.1		59	28	11	7	38	2.86		1.05	6.0	6	12	10	9		F. Wallick.
Marked Tree.	Poinsett.	24	24								4.57		1.68	1.8	6					L. Smith.
Mena.	Polk.	1,100	26	42.6	- 0.1	66	17	20	7	34	2.56	- 1.33	1.33	T.	7	15	6	10	nw.	R. R. St. John.
Mossville.	Newton.	17	17	36.6	- 0.1	59	17	15	1	32	0.94	- 2.76	0.57	0.0	3	14	2	15	s.	George Paxton.
Newport.	Jackson.	231	26								4.25	+ 0.68	2.46	1.0	6					Mrs. L. R. Cobb.
Ozark.	Franklin.	377	19	40.9	- 1.6	64	18	19	1	35	1.62	- 1.81	0.47	0.0	5	19	5	7	e.	R. M. Adams.
Pine Bluff.	Jefferson.	215	22	43.8	- 1.5	70	27	19	2	33	4.72	+ 0.01	1.85	T.	8					J. M. Hudson.
Pocahontas.	Randolph.	18	18	37.2	- 1.1	63	19	10	7	36	2.97	- 0.56	1.65	4.5	5	20	4	7		Benedictine Sisters.
Pond.	Benton.	1,250	13	36.2	- 1.3	64	17	11	2	42	0.93	- 1.20	0.36	1.0	4	12	8	11	sw.	A. F. Stevens.
Portland.	Ashley.	122	1	44.0		74	28	17	2	38	4.80		1.80	0.0	13					L. W. Gregory.
Prescott.	Nevada.	327	22	42.4	- 1.2	73	28	14	7	42	5.59	+ 1.91	1.86	0.0	10					A. M. Ellsworth.
Rogers.	Benton.	1,385	19	38.0	0.0	63	17	14	2	42	0.80	- 1.32	0.42	0.3	5	19	2	10	s.	Carl A. Starck.
Springbank.	Miller.	182	3								4.32		1.36	0.0	6					G. Field.
Stuttgart.	Arkansas.	495	23	40.6	- 3.6	69	28	16	21	34	4.31	- 0.25	1.68	T.	5	17	2	12	n.	H. A. Buerkle.
Subiaco.	Logan.	1,050	13	41.3	- 0.2	66	28	19	7	32	1.67	- 1.73	0.93	T.	4	16	4	11	ne.	New Subiaco Abbey.
Texarkana.	Miller.	332	26	44.4	- 2.9	73	28	23	2	33	4.51	+ 1.88	2.00	0.0	6					D. E. Moore.
Warren.	Bradley.	304	15	42.9	- 1.8	75	28	17	7	36	4.36	- 0.85	1.16	0.0	10					W. J. Savage.
Whitecliffs.	Little River.	206	6								5.33		2.00	0.0	9					John F. Payton.
Wiggo.	Garland.	17	17	41.0	- 0.0	69	28	13	2	40	3.98	- 0.12	2.28	T.	7	9	10	12	nw.	S. D. Jester.
Wynne.	Cross.	2	2	40.8		68	27	15	21	44	4.76		2.00	0.9	7					John Seals.
Mississippi.																				
Anguilla.	Sharkey.	107	2	46.3		72	28	21	7	31	3.49		1.73	T.	7	10	1	20	nw.	E. W. Cook.
Austin.	Tunica.	200	14																	H. J. Irvine.
Batesville.	Panola.	230	22	40.8	- 3.6	69	28	16	21	36	3.81	- 0.88	1.52	0.0	5	13	1	17	e.	J. M. Cox.
Big Creek.	Calhoun.	42.2				68		18	2	33	3.65		1.93	0.0	5	6	7	9	n.	T. P. Havens.
Byhalia.	Marshall.	390	1								3.55		1.57	1.5	5	15	4	12	n.	Tallahatchie Dng. Com.
Canton.	Madison.	228	20	46.8	- 1.6	73	27	23	2	32	3.48	- 1.39	1.57	0.0	10	7	14	10	ne.	Dr. G. W. Smith-Vaniz.
Charleston.	Tallahatchie.	177	3	41.1		71	28	19	21	37	3.97		1.82	0.0	3	15	3	13	nw.	Tallahatchie Dng. Com.
Clarksdale.	Coahoma.	241	1								3.08		1.12	T.	8	7	4	20	n.	A. C. Tuttle.
Coffeeville.	Yalobusha.	470	22	38.4	- 4.3	66	28	16	21	38	3.76	- 1.72	1.42	T.	8	14	0	17	se.	Tallahatchie Dng. Com.
Corinth.	Alcorn.	187	1								3.05		1.50	0.8	9	12	8	11	nw.	M. A. Candler.



TABLE 1.—Climatological data for December, 1910. District No. 7, Lower Mississippi Valley—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast days.
Mississippi—Cont'd.																			
Vicksburg.	Warren.	247	39	48.3	- 1.1	72	27	28	7	29	4.09	- 0.93	1.67	T.	10	7	5	19	U. S. Weather Bureau.
Water Valley.	Yalobusha.	300	21	42.6	- 3.3	69	28	18	34	34	3.45	- 1.41	1.55	T.	6	14	7	10	Miss Loula Erikson.
Woodville.	Wilkinson.	500	17	50.2	- 0.7	75	28	21	8	32	5.32	- 0.15	1.80	0.0	13	10	13	8	James E. Lee.
Yazoo City.	Yazoo.	116	10	46.2	- 1.1	72	28	19	2	36	3.88	- 0.48	1.66	0.0	8	11	3	17	W. H. Courts.
Louisiana.																			
Abbeville.	Vermilion.	18	22	54.1	+ 0.3	80	10	24	7	34	4.24	- 0.35	2.65	0.0	10	10	6	15	Hon. C. J. Edwards.
Alexandria.	Rapides.	77	19	49.2	- 0.3	75	4†	20	7†	42	4.42	- 0.58	1.57	0.0	8	9	0	22	Nellie Graham.
Amite.	Tangipahoa.	130	22	52.0	+ 0.9	77	27	19	25†	48	4.97	+ 0.09	1.80	0.0	7	4	14	13	Lula M. Wentz.
Baton Rouge.	E. Baton Rouge.	35	22	54.5	+ 2.6	75	10†	30	7	27	4.17	- 0.64	2.50	0.0	11	9	1	21	Elmo M. Bott.
Burnside.	Ascension.	20	10	51.6	- 1.6	78	10	23	7	32	5.08	.....	2.60	0.0	9	6	9	16	C. S. McFarland.
Burrwood.	Plaquemines.	1	20	57.4	- 1.3	74	5	37	2†	21	3.53	- 0.68	1.21	0.0	5	13	6	12	Graham Myers.
Cadens.	St. Martin.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	C. E. Smedes.
Calhoun.	Ouachita.	180	17	47.8	+ 0.9	74	28	18	7	36	5.41	+ 0.70	2.20	0.0	9	9	3	19	N. L. Experiment Station.
Cameron.	Cameron.	6	15	55.6	+ 0.7	70	9†	31	0†	30	4.79	+ 1.71	2.30	0.0	5	4	5	22	State Biologic Station.
Carrollton.	Orleans.	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Loyola College.
Cheneyville.	Rapides.	67	30	53.6	+ 3.5	77	11	21	7	43	5.40	+ 0.66	2.70	0.0	5	10	0	21	Walter I. Tanner.
Cinclare.	W. Baton Rouge.	.....	.....	51.8	.....	76	10	23	6	37	3.85	.....	2.40	0.0	8	10	7	14	Cinclare Cent. Fac'y.
Clinton.	East Feliciana.	113	20	50.9	- 0.5	75	28	23	2	33	3.84	- 0.94	1.29	0.0	9	10	6	15	John A. White.
Collinston.	Morehouse.	65	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Jno. B. Rittly.
Covington.	St. Tammany.	39	17	50.6	- 0.1	76	10†	22	2†	43	3.52	- 1.16	1.56	0.0	11	12	2	17	Lucille Champagne.
Dodson.	Winn.	.....	.....	49.2	.....	77	4	20	7	34	5.04	.....	1.79	0.0	6	7	9	15	J. P. Lucas.
Donaldsonville.	Ascension.	33	20	56.0	+ 1.5	85	1	28	7	50	7.50	+ 2.88	5.10	0.0	6	12	3	16	John F. Park.
Farmerville.	Union.	177	20	45.2	- 1.7	73	.....	16	.....	43	5.06	+ 0.14	2.56	0.0	3	10	2	19	W. P. Chandler.
Ferriday.	Concordia.	.....	.....	49.8	.....	75	10	19	2†	34	4.60	.....	1.50	0.0	10	13	1	17	R. Z. Sclater.
Franklin.	St. Mary.	10	18	54.4	+ 1.0	78	10†	25	7†	41	2.95	- 1.55	1.63	0.0	10	12	0	19	Josephine M. Bonney.
Grand Cane.	De Soto.	302	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Chas. M. Huson.
Grand Coteau.	St. Landry.	93	23	54.2	+ 0.4	80	10	24	7	30	5.47	+ 0.62	2.10	0.0	11	10	11	10	St. Charles College.
Hammond.	Tangipahoa.	44	15	52.0	+ 0.3	80	10	20	2	40	3.81	- 0.79	1.83	0.0	7	13	15	3	C. C. Carr.
Houma.	Terrebonne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Prof. J. M. Foote.
Jena.	Catahoula.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	W. B. Taylor, Jr.
Jennings.	Calcasieu.	30	12	52.4	+ 0.4	79	10	25	7	39	4.68	- 0.41	1.80	0.0	11	8	11	12	J. F. Buch.
Lafayette.	Lafayette.	36	21	52.8	+ 0.1	80	10	24	7	32	4.16	- 0.26	2.57	0.0	10	8	9	14	J. J. Davidson.
Lake Charles.	Calcasieu.	22	22	52.3	- 0.9	79	10	22	7	38	2.15	- 1.76	1.55	0.0	3	22	0	9	Geo. Boudreaux.
Lakeside.	Cameron.	.....	.....	53.2	+ 1.4	77	28	27	7	34	5.60	.....	2.65	0.0	6	20	1	10	L. J. Nunemacher.
Lawrence.	Plaquemines.	6	18	53.9	- 0.1	78	3	28	3†	41	3.59	- 0.78	1.72	0.0	4	16	6	9	H. C. Warmoth.
Leesville.	Vernon.	.....	.....	51.8	.....	79	4†	19	7	39	5.24	.....	1.58	0.0	12	15	10	6	C. M. McFarland.
Liberty Hill.	Bienville.	23	.....	50.0	+ 0.4	77	4	18	7	38	3.55	- 1.30	1.97	0.0	4	8	3	20	Dr. E. A. Crawford.
Logansport.	De Soto.	192	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Bettie M. Dennis.
Melville.	St. Landry.	45	21	48.8	- 3.4	75	10	19	2†	45	4.71	- 0.04	1.98	0.0	10	12	0	19	Chas. B. McNeill.
Minden.	Webster.	194	18	46.8	- 0.5	77	4	20	7	40	4.24	- 0.81	1.98	0.0	9	8	2	21	Ethel Fort.
Monroe.	Ouachita.	82	22	48.0	- 1.8	79	10	22	14	45	4.90	+ 0.42	2.00	0.0	6	12	2	17	Jno. G. Welch.
Morgan City.	St. Mary.	14	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Virgil E. Kinsey.
Newellton.	Tensas.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	John D. Fultz.
New Iberia.	Iberia.	15	20	55.3	+ 0.5	75	10	28	7	33	3.81	- 0.54	2.60	0.0	7	7	6	18	Mrs. Jno. A. Gebert.
New Orleans (1).	Orleans.	51	40	54.1	- 0.3	76	5	34	7	30	3.45	- 1.01	1.57	0.0	9	9	11	11	U. S. Weather Bureau.
New Orleans (2).	do.	18	21	54.5	+ 0.7	76	5	26	7	38	3.70	- 1.45	1.47	0.0	8	4	7	20	Sugar Experiment Station.
Opelousas.	St. Landry.	83	18	51.6	+ 0.5	78	28	22	7	39	5.30	+ 0.34	2.75	0.0	8	9	2	20	Andrew Mores.
Paradis.	St. Charles.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	La. Meadows Co.
Plain Dealing.	Bossier.	268	18	48.4	+ 1.9	78	28	22	2	45	3.77	- 1.64	1.35	0.0	8	9	8	14	Leon Sanders.
Rayne.	Acadia.	44	18	54.6	+ 1.6	80	10	24	7	33	3.29	- 1.44	1.25	0.0	8	11	0	20	A. P. McNeill.
Reserve.	St. John Baptist.	.....	.....	53.2	.....	82	5	28	7	50	3.95	.....	1.67	0.0	7	10	14	7	Leon Godchaux Co., Ltd.
Robeline.	Natchitoches.	147	13	49.0	+ 2.0	78	4	19	2†	45	4.30	+ 0.45	2.15	0.0	7	8	2	21	Ruby McCook.
Ruston.	Lincoln.	312	13	49.8	+ 1.8	80	28	23	7†	37	4.20	- 0.63	2.20	0.0	2	8	3	20	J. C. H. McKinney.
St. Francisville.	West Feliciana.	115	6	52.4	.....	79	18	24	7	42	5.97	.....	3.50	0.0	4	12	19	0	L. P. Kilbourne.
Schriever.	Terrebonne.	17	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Chas. V. Moore.
Shreveport.	Caddo.	249	39	48.8	- 0.1	76	4	25	7	32	3.74	- 0.63	1.00	0.0	9	10	7	14	U. S. Weather Bureau.
Simmesport.	Avoyelles.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	C. T. Leigh.
Southern Univ. Farm.	Jefferson.	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	F. L. St. Martin.
Sumartown.	Calcasieu.	17	.....	53.9	+ 2.2	75	11	25	2	28	3.90	- 0.62	1.59	0.0	4	2	26	3	G. W. Richardson.
Talulah.	Madison.	91	2	47.8	.....	79	8†	15	1	42	4.73	.....	1.96	0.0	6	8	13	10	C. E. Speed.
Walker.	Livingston.	.....	.....	58.4	.....	76	28†	32	5	32	3.86	.....	2.30	0.0	6	4	10	17	H. C. Fondren.

a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.

† Also on other dates.

‡ Separate dates of falls not recorded.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

|| Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

¶ Estimated by observer.

⌈ Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.



10

10



TABLE 2.—Daily precipitation for December, 1910. District No. 7, Lower Mississippi Valley—Continued.

Stations.	River basins.	Day of month.																															Total		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
Texas—Continued.																																			
Memphis	Red																																T.	T.	
Miami	Canadian													T.									.02											.02	
Mobeetie	Red																															T.		.02	
Nazareth	do																																		
Ochiltree	Canadian																																		
Pampa	do																																		
Paris	Red													T.	.85	.15	T.							.04	.25							.79	.14	2.22	
Plemons	Canadian																						T.											T.	
Quanah	Red													T.		.30																		.30	
Ringo Crossing	do														0.51																			4.40	
Romero	Canadian													T.																				T.	
Sherman	Red																																		
Sulphur Springs	do																																		
Texline	Canadian																																	.05	
Tulia	Red													T.	T.	.21							.08										.10	.30	
Winfield	do													T.	.41	.03								1.67								4.00	.07	.66	6.24
Kansas.																																			
Alden	Arkansas					T.																												.36	
Anthony	do						T.																.03											.17	
Burlington	Neosho				.11	.20								.07									.03											.07	
Chanute	do				.28	.67																	T.											1.03	
Cimarron	Cimarron				.05									T.																				.18	
Cold water	do														.09								.10										T.	T.	
Columbus	Neosho																						.03											.20	
Coolidge	Arkansas																																		
Cotton road Falls	Neosho				.06	.15																												.65	
Council Grove	do				*	.02																	T.										.25	.07	
Cunningham	Arkansas					T.																	T.											.45	
Dodge City	do				.01	T.									.02								T.											.32	
El Dorado	do					.10																	.03											T.	
Ellinwood	do					.02																	T.											.73	
Emporia	Neosho				.10	.15																	.01											.03	
Eureka	Verdigris				T.	.15																												.43	
Fredonia	do				T.	.27																	T.											.23	
Garden City	Arkansas				T.																													.65	
Greenburg	do					.01																												.11	
Grenola	Verdigris				T.	.10																	.10											.43	
Howard	do				T.	.16																	T.											.20	
Hugoton	Cimarron																																	.41	
Hutchinson	Arkansas					T.																												.67	
Independence	Verdigris				T.	.36																	.02											.05	
Iola	Neosho				.08	.24						T.											T.											.39	
Irene	Arkansas				T.								T.	T.	T.																			.05	
Jetmore	do					.04								.02									T.											.79	
Kingman	do														.02								T.											T.	
La Crosse	do					.03																	T.											.51	
Larkin	do				T.																		.04											.02	
Larned	do					.02																												.13	
Lebo	Neosho				.03	.25																												.10	
Le Roy	do				.01	.01	.23																											.96	
Liberal	Cimarron				T.																													T.	
Macksville	Arkansas																																	.16	
McPherson	do					.02																												.64	
Madison	Verdigris				.04	.25																	.03											.82	
Medicine Lodge	Neosho					.15																												.69	
Medicine Lodge	Arkansas				.03	T.																												.22	
Mount Hope	do					.05																												.42	
Neosho Rapids	Neosho				T.	.80																												.05	
Nem City	Arkansas																																	.98	
Newton	do					.07																												.37	
Norwich	do					T.																												.23	
Onwego	Neosho				.02	.25																												.15	
Plains	Cimarron														.02																			.71	
Rome	Arkansas					.05																												.08	
Sedan	Verdigris					.25																												.96	
Toronto	do				.05	.35																												.26	
Ulysses	Cimarron				T.									T.																				.14	
Walnut	Neosho				.07	.20	T.																											.58	
Wichita	Arkansas				T.	.08																												.50	
Winfield	do					.05																												.96	
Yates Center	Verdigris						.51																												T.
Oklahoma.																																			
Ada	Canadian														.05																			.50	
Alva	Arkansas																																		
Apache	Red																																		T.
Arapaho	Washita														T.		.07	T.																.75	
Ardmore	Red														.75	.30	T.																	.30	
Bartlesville	Arkansas				.10	.20																												T.	
Beaver	Canadian																																		.25



## 10

10

10

10



TABLE 2.—Daily precipitation for December, 1910. District No. 7, Lower Mississippi Valley—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Arkansas—Continued.																																		
Dardanelle[]	Arkansas.					T.	.14																.12	.66			.04		.16	1.20	.30		2.62	
Denhard.	White.																						.34					.04	T.	.95			1.93	
Dodd City.	do.					.50	.10																											
Dutton.	do.																																	
Earl.	St. Francis.																																	
Eldorado[]	Ouachita.			.07	T.							.02	.11	.08	.06	.06			.59				T.	1.79			T.	.01		.80	.33		3.92	
England[]	Arkansas.							T.																	1.95					.29	.33		4.39	
Eureka Springs.	White.			T.	.22	T.																								.29	.33		0.84	
Fayetteville.	do.				.05																								.20	.50		0.75		
Fort Smith.	Arkansas.				.04																		.06					.18	.09	.22		0.59		
Fulton[]	Red.												.20	1.00	.20	.24								1.20					.12	2.00	.20	5.16		
Hardy.	White.			.08	1.12	.07																		1.20					.54	.66	1.52		4.09	
Helena[]	Mississippi.				.04	.20	.02																	1.10						.70	.92	2.98		
Hot Springs.	Ouachita.				.48																								.66	1.52		5.39		
Huttig.	do.				.05									.08		.12	.60		.02				1.20						.49	3.22		.02	4.37	
Jonesboro.	White.			.22		.24																	.45	.95						.40	2.00		4.26	
Junction.	Ouachita.				T.	T.								.33				T.												1.50		.40	2.23	
Lake Farm.	Arkansas.			.11	T.								.24										1.52			.14			3.42			5.43		
Lewisville.	Red.				T.						T.	.03	.24	.30	T.	.13		.03					2.00					T.	.24	1.17		4.14		
Little Rock.	Arkansas.			T.	.03	T.						T.	.04									T.	1.68	.08			.01	T.	1.85	1.71		5.40		
Lutherville.	do.				.12																		.77					.10		1.10		T.	2.09	
Malvern[]	Ouachita.					.10	T.						.10	.13		.17							.30	1.40			.10	T.	.40	2.10	.33	5.22		
Mammoth Spring.	White.			.15	.60																		.50					.18	.38	1.05		2.86		
Marked Tree[]	St. Francis.				.50	.30																	1.50						.47	1.68	.12	4.57		
Mea.	Ouachita.				T.	.02							.16	.12									.68					.05	.20	1.33		2.56		
Mossville.	White.																											.17	.20	.57		0.94		
Newport[]	do.			.22		.38																	1.00						.19	1.90	.56	4.25		
Ozark.	Arkansas.			T.	.14																		.42			T.		.40	.19	.47		1.62		
Pine Bluff[]	do.				.10	T.							.10	.11		.06								1.80					.10	1.85	.60	4.72		
Pocahontas.	White.				.65																		.28	.27								2.97		
Pond.	Arkansas.			.17	T.	.10							.13	.15	.02	.18	.10						T.	.80					T.	*	.66		0.93	
Portland[]	Ouachita.			.12	.09	.08																		1.80					.02	.20	1.58		4.80	
Prescott[]	do.												.30	.98	.05	.06	.02							.05	1.86				.17	1.80	.30	5.59		
Rogers.	Arkansas.			.03	.02	.01																							.32	.42		0.80		
Springbank[]	Red.										T.	T.	T.	.30	.14	T.			.09	T.			T.	2.15							.28	4.32		
Stuttgart.	Arkansas.				.10	T.							.06										1.61				T.		.86	1.68		4.31		
Subaco.	do.			T.	T.																		.64					.10	.08	.85		1.67		
Texarkana[]	Red.												.37	.12	.14									1.58								4.51		
Warren[]	Ouachita.			.09		.11							.09	.54		.10								1.65			.15			1.16	.35	4.36		
Whitecliffs[]	Red.			.02	.05								.10	1.05	T.	.05								1.70					T.	.18	2.00	.18	5.33	
Wiggs.	Ouachita.			T.	.11	T.									T.								.85	.22				.05	.30	2.28		3.98		
Wynne[]	St. Francis.				.47	.21																	1.05				.04		.30	2.00	.69	4.76		
Mississippi.																																		
Anguilla.	Yazoo.			.09	T.	T.					.12	.13	T.	T.		.27		.40						1.73						.75		3.49		
Austin.	do.				.61	.22																		1.36				.10			1.52	3.81		
Batesville[]	do.				.77											.30		T.						1.93						.61		T.	3.65	
Big Creek.	do.			T.	.68	.15																		1.05					.10		1.57	3.55		
Byhalis.	do.																													.29		.02	3.48	
Canton.	Big Black.			.31	.13						.07		.05		.26		.75	.03						1.57						.12			3.97	
Charleston.	Yazoo.				.95	T.																		1.82						.50	1.12		3.08	
Clarksdale[]	do.				.20	T.								.12		.04		.05						1.01					.27	.02	.74		.01	4.47
Coffeeville.	do.				.03	1.82																			1.48								3.76	
Corinth[]	Mississippi.				.70	.16	T.					.02												1.24	.18			.04		.136		4.81		
Crenshaw.	Yazoo.			.15	.30	.04																		.95				.06	.01	T.	1.50	.03	T.	3.05
Denmark.	do.				.97	.80	.05																	1.75				.17			.11	.03	T.	3.79
Duck Hill.	do.						T.	T.	T.				.74		.09																		T.	3.52
Edwards.	Big Black.			.23									.18	.05				.43	.05		</													



TABLE 2—Daily precipitation for December, 1910. District No. 7, Lower Mississippi Valley—Continued.

Stations.	River basins.	Day of month.																														Total.		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		31	
Louisiana—Continued.																																		
Farmerville	Ouachita.									T.								.50						2.00				T.			2.56		5.06	
Ferriday	do.				.15	.10					.11	.91			.11			.51						.15	1.50					.81	.25	4.60		
Franklin	Coast.				.06	.01	.08				.01		T.				.11	.22	.35	.18					1.63				T.		.30		2.95	
Grand Cane	Red.																																	
Grand Coteau.	Coast.				.12	.18				T.	.02	.05			T.		.02	.08	2.10					.08	2.05						.65		12	5.47
Hammond	do.				.10	.10					T.	.43					.10	T.	.75						1.83						.50		3.81	
Houma	do.																																	
Jena	Red.																																	
Jennings	Coast.				.17		.10				.05			.10	.05		.13	.16	.12	1.80						1.67					.33		4.68	
Lafayette	do.				.50		.06				.05					.04	.10	.20	.10	.20					2.57						.34		4.16	
Lake Charles	do.										1.55							.40	.20														2.15	
Lakeside	do.				.20												.65	.95	.50							2.65					.65		5.60	
Lawrence	do.																		.51	.23						1.13						1.72		3.59
Leesville	Sabine.									.34				.13	.70	.16	.20	.10	.12						10	1.58			.03		.88		.90	5.24
Liberty Hill	Red.														.25									1.97							1.15		3.55	
Logansport	Sabine.														.50			.50													.64	.02	4.46	
Melville	Red.				.21	.16	T.				.06	T.	.55		.10	T.		.15	.70	.20					2.80								4.71	
Minden	do.													.11	.06	.23	T.		.25	.09						1.98						.60		4.24
Monroe	Ouachita.					.02				T.				.02	T.	.28				.60						2.00							1.98	4.90
Morgan City	Coast.				T.	.22	.11				.02				.17		.09	.16	.86	.23						.99	.02					.19		3.06
Newellton	Mississippi.																																	
New Iberia	Coast.				.35	T.						.15					.15	T.	.25					2.60	.05						.26	T.	3.81	
New Orleans (1)	do.				T.	.18					.06	.08					.08	.40	1.17	.01				T.	1.20					T.	.27		3.45	
New Orleans (2)	do.					.07					.05	.14					.12		1.47	.05					1.20						.60		3.70	
New Orleans (3)	do.				.01						.01							.28	1.03						1.31						.06		2.70	
New Orleans (4)	do.					.06					.05	.11					.10	.30	1.08	.02					1.14						.55	.01	3.42	
New Orleans (5)	do.				.01	.20					.01	.21					.01	.45	1.01						1.13						.46		3.49	
New Orleans (6)	do.					.16					.06	.04					.08	.40	1.04						1.18						.28		3.24	
New Orleans (7)	do.					.02						.95					.08	.43	1.25						1.35						.20		4.28	
New Orleans (8)	do.					.14					.03	.11					.08	.36	1.02	.01					1.06						.33	.01	3.15	
Opelousas	do.				.17	T.	T.				.15	.08				T.		.08	.46	.90						2.75						.71		5.30
Paradis	do.																																	
Plain Dealing	Red.				.02	.16								.22					.10						1.08	.80					.04	1.35		3.77
Rayne	Coast.				.16	.03					.05		T.	T.			.20	.46		.60				T.		1.25					.60		3.29	
Reserve	do.											.11			.04			.13	.73	.04					1.67						.23		3.95	
Robeline	Red.										.15						.15	.23	T.							2.15						.15	1.35	4.30
Ruston	Ouachita.													T.											T.	2.00						2.20		4.20
St. Francisville	Mississippi.																.35		1.02	1.10						3.50	T.						5.97	
Schriever	Coast.					.04						.03					*	*	*	*	2.06					.97						1.00	T.	4.10
Shreveport	Red.					T.							.04	.33			.03		.26	.01					1.60					T.	.14	1.31	.02	3.74
Simmesport	do.				.12	1.35					.04	.34		.19	.28	.14		.14	.15	.16						1.86						.50		5.27
Southern Univ. Farm.	Coast.				T.	.25						.10	.12						1.40	.05					T.	1.35					.20		T.	3.80
Sugartown	do.																.86									1.59						.37		4.73
Tallulah	Mississippi.				.57	.10							.22					.82								1.96					1.06			4.73
Walker	Coast.				.25			.20											.70						2.30				.01		.40			3.86



TABLE 3.—Maximum and minimum temperatures at selected stations, December, 1910. District No. 7, Lower Mississippi Valley.

Date.	Colorado.						New Mexico.				Texas.				Kansas.								Oklahoma.					
	Lamar.		Leadville.		Pueblo.		Albert.		Chamarron.		Amarillo.		Paris, #.		Dodge City.		Ellinwood.		Iola.		Liberal.		Wichita.		Ardmore, #.		Bartlesville.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	42	14	42	19	41	19	49	25	50	21	50	22	46	27	39	16	37	10	34	15	41	13	35	16	45	25	48	18
2....	60	22	44	19	55	22	55	32	61	27	60	23	51	26	54	18	46	17	43	13	47	16	46	20	54	23	45	14
3....	62	20	36	27	55	30	56	24	62	31	60	28	62	21	53	32	49	36	50	29	55	25	51	32	63	40	48	35
4....	59	24	31	14	58	28	65	34	61	32	72	37	70	35	49	24	40	25	29	26	47	23	33	26	53	41	36	30
5....	53	23	17	8	48	20	50	21	57	27	47	29	43	37	35	16	32	22	30	25	44	26	29	22	40	31	34	32
6....	51	8	36	1	57	14	51	18	55	6	47	21	43	30	52	8	40	4	30	19	55	8	35	11	42	20	35	17
7....	45	12	31	14	47	21	61	32	50	17	47	29	58	20	37	15	38	13	33	18	60	16	33	20	58	22	42	19
8....	52	15	31	6	52	19	59	29	54	15	57	30	57	21	57	14	50	15	35	12	60	13	42	13	54	29	45	20
9....	60	43	31	26	67	25	70	33	65	22	73	31	57	30	63	30	64	20	45	15	70	20	58	24	60	25	61	34
10....	59	16	37	26	48	24	61	32	56	20	56	30	66	32	54	29	57	29	50	27	58	23	52	26	63	40	57	35
11....	53	34	34	26	51	26	60	34	63	17	61	31	53	45	43	26	45	31	41	27	44	28	43	35	56	36	42	29
12....	49	10	37	17	40	22	50	22	51	13	39	30	46	45	36	31	40	31	36	24	52	28	38	32	47	40	51	35
13....	39	30	30	11	36	24	43	32	40	19	37	31	36	34	39	28	43	29	41	16	36	27	44	27	37	33	45	26
14....	51	16	40	3	49	17	52	25	47	25	44	32	43	32	56	24	56	25	50	23	54	24	53	26	41	31	55	20
15....	52	22	42	10	51	21	53	27	50	26	47	29	60	34	48	27	50	25	48	30	50	24	47	32	54	35	50	34
16....	57	15	44	13	63	21	60	25	59	12	61	27	60	36	62	21	59	22	52	19	64	18	57	25	60	32	59	19
17....	55	12	43	11	45	18	55	25	50	20	51	25	68	37	52	21	51	15	48	26	53	18	50	25	68	35	59	29
18....	56	14	40	12	44	20	55	25	49	19	46	23	65	40	49	10	50	19	49	22	54	18	49	26	59	36	55	23
19....	57	18	42	14	50	20	60	26	51	11	57	24	64	32	56	23	55	28	51	32	64	24	54	31	60	29	58	34
20....	55	24	36	12	49	20	51	28	45	19	57	34	55	29	49	20	38	18	50	20	57	28	43	26	53	34	55	28
21....	53	31	30	10	42	31	51	28	43	14	53	32	48	32	46	31	38	24	41	17	56	33	40	23	52	35	45	17
22....	41	23	18	0	36	18	47	29	37	19	44	29	48	32	45	24	45	25	47	27	48	28	45	27	58	43	55	40
23....	42	8	29	1	42	10	55	17	40	7	50	18	49	31	49	13	44	14	37	21	50	10	41	20	50	26	46	22
24....	58	16	39	12	62	16	60	27	60	14	59	24	51	25	55	22	50	13	42	16	60	20	49	19	63	28	50	20
25....	50	24	27	14	39	26	67	27	49	19	49	33	64	28	50	25	50	18	50	34	50	24	51	34	60	30	57	38
26....	46	14	31	5	56	16	65	28	53	12	49	31	62	40	50	22	51	20	50	24	54	24	47	27	55	36	53	22
27....	43	17	25	5	46	19	56	34	50	17	56	33	71	41	48	28	48	25	48	25	53	29	51	32	69	40	53	28
28....	44	13	17	1	40	20	46	22	44	8	45	27	69	50	42	20	40	31	43	37	44	18	40	32	55	40	56	42
29....	43	12	18	-6	36	11	42	17	35	7	39	21	47	45	36	18	36	20	39	26	40	16	38	25	45	38	42	30
30....	54	3	30	1	53	9	48	12	54	2	49	16	46	23	52	15	45	17	40	16	54	13	43	20	47	20	45	13
31....	48	10	24	2	48	19	51	18	43	4	58	22	.....	24	52	27	46	30	44	29	58	24	47	29	51	27	53	25
Mns..	51.3	18.5	32.2	10.7	48.6	20.2	55.0	26.0	51.6	16.8	52.3	27.5	55.3*	32.7	48.6	22.4	46.6	21.7	42.4	22.8	52.6	21.3	44.5	25.6	53.9	32.3	49.5	26.7

Date.	Oklahoma.										Missouri.										Lynnville, Ky.		Jackson, Tenn.					
	Enid, #.		McAlester.		Mangum, #.		Muskogee.		Oklahoma.		Weatherford, #.		Woodward.		Caruthersville.		Ironton, #.		Lamar, #.		Olden.		Springfield.					
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.				
1....	50	20	43	23	44	22	39	17	39	19	46	22	50	13	39	22	34	18	36	16	35	17	31	16	.....	.....	35	24
2....	57	26	55	30	57	22	49	15	52	24	54	21	58	11	43	17	40	15	45	14	43	12	41	6	.....	.....	40	22
3....	60	21	59	30	60	24	60	34	57	39	56	29	57	20	47	22	43	18	48	17	48	29	48	29	.....	.....	43	23
4....	40	22	51	40	57	35	51	38	44	32	34	34	49	27	41	25	38	20	32	17	40	27	32	25	.....	.....	45	28
5....	34	30	43	32	36	35	38	30	39	26	38	27	41	23	34	30	28	26	30	29	32	24	32	24	.....	.....	42	32
6....	44	14	42	26	44	17	36	24	39	14	27	14	52	7	32	27	31	24	32	24	28	20	26	21	.....	.....	33	27
7....	50	14	56	26	55	12	55	20	54	27	59	15	46	9	41	21	41	5	40	21	41	16	37	19	.....	.....	43	27
8....	51	17	55	28	51	22	48	21	47	17	57	18	57	10	43	21	41	11	40	19	45	21	41	21	.....	.....	45	26
9....	50	17	62	23	62	21	57	21	58	27	62	20	64	13	45	20	48	8	52	19	46	24	50	23	.....	.....	51	23
10....	60	20	60	45	55	22	60	40	57	29	58	35	57	27	57	31	50	33	55	22	54	36	49	34	.....	.....	59	30
11....	64	21	55	32	60	30	55	28	54	33	57	25	50	23	45	26	45	26	41	27	47	27	39	31	.....	.....	48	25
12....	45	24	50	43	56	36	51	44	46	40	46	35	47	36	42	29	34	50	38	31	43	29	37	22	.....	.....	43	32
13....	46	32	45	37	50	26	48	33	43	34	40	31	40	29	37	20	39	8	41	18	38	14	35	18	.....	.....	36	22
14....	50	30	46	31	48	36	48	23	44	36	49	35	50	37	50	15	48	9	50	18	48	19	48	22	.....	.....	50	17
15....	53	24	57	40	55	36	58	36	51	37	55	35	50	28	58	30	49	30	51	22	53	35	47	32	.....	.....	49	34
16....	61	17	63	27	60	20	57	22	58	24	64	242</																



TABLE 3.—Maximum and minimum temperatures at selected stations, December, 1910. District No. 7, Lower Mississippi Valley—Continued.

Date.	Tennessee.				Arkansas.																Mississippi.							
	Memphis.		Union City.		Bentonville.		Corning.		Dardanelle.##		El Dorado.##		Fort Smith.		Little Rock.		Pine Bluff.##		Texarkana.##		Wynne.##		Clarksdale.##		Corinth.##		Greenville.##	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	37	26	50	20	37	16	39	22	60	26	45	27	42	24	40	27	45	26	45	28	40	35	41	27	31	24	45	29
2.....	40	23	48	24	46	15	42	17	55	16	49	19	48	21	47	25	50	19	47	23	45	23	45	24	40	23	47	24
3.....	46	32	47	22	55	34	48	25	55	16	57	20	60	33	50	34	53	30	56	23	50	22	47	25	44	22	54	26
4.....	45	38	44	26	38	32	46	26	53	30	64	35	46	40	46	35	50	43	65	36	46	26	56	32	56	27	66	35
5.....	38	31	37	31	33	27	34	36	40	37	50	40	44	32	38	31	39	35	47	44	45	35	39	38	42	38	42	41
6.....	31	29	32	25	27	20	30	27	38	32	39	29	34	26	36	30	39	29	42	35	39	32	35	30	32	28	37	32
7.....	44	27	39	22	49	20	43	13	52	16	52	18	48	21	50	23	53	20	46	25	53	26	49	24	44	26	49	23
8.....	44	34	43	21	49	26	42	19	51	17	57	23	53	30	53	35	54	30	54	26	49	25	45	26	50	26	48	25
9.....	52	30	45	23	59	23	46	19	53	21	67	34	52	26	54	30	59	27	63	34	56	24	59	28	56	27	69	33
10.....	58	45	44	22	56	31	57	29	64	33	67	34	62	40	61	44	63	50	66	36	64	20	62	29	58	28	69	39
11.....	49	35	55	29	48	29	48	26	49	24	51	43	50	33	52	38	50	31	46	44	61	24	55	34	50	26	57	35
12.....	43	28	43	27	43	34	41	31	48	40	40	40	47	43	45	36	44	40	40	40	49	26	44	24	44	26	42	40
13.....	39	25	40	19	38	22	38	18	38	28	35	33	43	31	37	25	39	28	35	32	44	24	43	26	44	22	39	30
14.....	47	26	42	16	50	20	48	26	49	18	46	31	47	25	48	26	50	25	45	30	60	24	53	23	51	20	50	30
15.....	56	41	52	33	50	31	55	32	60	36	62	35	50	40	58	42	60	43	58	34	58	23	60	23	56	21	61	31
16.....	51	30	40	23	54	24	51	21	57	22	63	36	54	30	54	35	59	30	61	40	60	25	55	28	52	26	60	34
17.....	54	38	53	23	62	32	58	24	63	25	61	36	63	36	54	36	58	42	59	39	61	23	54	28	52	26	62	37
18.....	57	44	57	39	50	31	59	36	60	35	61	47	58	33	61	38	65	43	61	48	63	37	58	38	52	32	61	47
19.....	55	40	52	36	52	30	55	37	58	34	60	30	57	32	61	38	59	31	62	31	62	38	59	34	54	34	59	32
20.....	42	29	50	24	39	21	50	29	51	33	62	32	48	31	46	33	51	30	54	31	43	32	45	34	36	30	52	36
21.....	42	25	40	16	46	18	43	15	46	15	47	27	44	25	44	28	48	23	49	31	50	15	45	19	45	16	50	22
22.....	49	37	47	27	44	35	40	30	40	33	55	29	43	35	43	37	52	42	50	31	52	15	52	19	50	16	55	26
23.....	43	35	43	33	42	22	46	33	47	33	49	40	46	30	45	35	49	37	48	36	47	35	47	39	40	36	49	40
24.....	39	28	37	21	53	19	40	21	58	34	57	26	56	26	47	31	56	26	54	28	45	25	48	27	40	26	53	26
25.....	53	30	47	23	50	37	53	25	59	23	62	27	56	34	58	35	60	31	60	29	60	21	57	27	52	24	59	28
26.....	51	42	54	38	51	29	53	39	56	45	65	40	57	43	53	46	54	48	66	42	53	33	52	32	47	26	66	40
27.....	63	47	60	30	60	36	52	31	61	46	69	42	62	45	66	45	70	48	67	49	68	43	67	47	62	40	73	48
28.....	64	56	64	43	50	39	65	43	60	45	74	67	57	45	68	53	70	62	73	56	65	52	71	50	66	47	73	56
29.....	64	37	45	39	45	24	59	39	48	42	52	61	48	31	53	38	50	50	51	51	59	52	52	51	62	56	63	60
30.....	41	28	45	26	42	18	43	23	44	25	47	28	44	23	43	27	45	28	45	27	44	26	46	32	44	32	46	33
31.....	45	32	44	25	44	27	41	26	46	24	50	29	47	30	44	33	47	28	54	29	51	23	47	29	48	28	51	29
Mns.....	47.8	33.8	46.7	26.6	47.2	26.5	47.2	26.8	52.2	28.9	54.7	33.8	50.9	32.1	50.1	34.5	52.9	34.7	53.8	35.1	53.0	28.5	51.2	31.0	48.5	28.4	54.7	34.4

Date.	Mississippi.												Louisiana.													
	Kosciusko.##		Natchez.##		Vicksburg.		Alexandria.##		Baton Rouge.##		Covington.##		Lafayette.##		Lake Charles.##		Munroe.##		New Orleans.		Robeline.##		Schriever.##		Shreveport.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	40	26	48	32	43	31	48	30	46	38	50	30	49	31	60	34	54	30	47	39	49	29	.....	.....	45	29
2.....	43	21	53	27	46	28	50	23	50	34	54	22	52	27	58	30	54	23	49	37	54	19	.....	.....	48	28
3.....	48	22	59	27	56	32	59	23	64	37	60	22	63	28	65	29	54	25	62	41	67	22	.....	.....	62	34
4.....	63	28	67	34	68	50	75	33	66	58	69	26	73	38	70	32	70	25	72	53	78	38	.....	.....	76	52
5.....	66	48	74	55	67	38	69	56	65	62	73	55	73	62	70	38	51	28	76	46	57	56	.....	.....	61	37
6.....	32	32	39	36	38	33	45	31	44	40	42	40	46	34	59	31	55	25	46	37	44	34	.....	.....	43	32
7.....	46	21	51	25	50	28	54	20	50	30	55	23	51	24	59	22	54	24	48	34	52	19	.....	.....	52	25
8.....	46	23	53	25	54	34	55	30	55	39	62	23	61	27	60	25	59	24	63	40	60	21	.....	.....	62	38
9.....	62	24	65	46	65	46	70	40	72	48	69	29	73	41	70	40	70	35	70	49	67	25	.....	.....	64	41
10.....	63	38	76	49	69	55	75	45	75	55	76	45	80	50	79	48	79	43	73	56	70	41	.....	.....	70	55
11.....	57	32	61	54	58	49	69	55	64	59	67	56	70	58	75	52	69	44	63	58	69	52	.....	.....	62	51
12.....	49	39	51	50	53	41	55	51	62	58	55	54	65	60	66	55	47	44	60	47	57	51	.....	.....	52	39
13.....	40	28	42	41	43	37	40	39	54	46	54	45	51	43	50	41	42	23	53	46	37	35	.....	.....	39	32
14.....	56	28	52	36	52	40	49	35	59	48	66	45	65	43	59	44	49	22	57	47	41	34	.....	.....	44	33
15.....	49	30	62	40	53	45	57	39	65	52	63	46	67	45	60	40	58	39	66	53	57	35	.....	.....	62	42
16.....	58	33	67	47	63	44	69	45	64	54	57	51	64	54	64	38	70	37	64	54	66	42	.....	.....	64	44
17.....	47	34	60	52	54	48	65	52	62	57	60	5														



**Climatological Data for December, 1910.**  
**DISTRICT No. 8, TEXAS AND THE RIO GRANDE VALLEY.**

BERNARD BUNNEMEYER, District Editor.

**GENERAL SUMMARY.**

Unusually mild and generally pleasant weather prevailed during the month, but there was a decided deficiency of precipitation in the greater portion of the district, which was most pronounced in the western half of Texas and in New Mexico. Good rains occurred in the eastern half of Texas over a broad area extending from the Guadalupe watershed to that of the Sabine, which replenished the water supply and broke the drought in that section. There was very little precipitation before the 12th, but after that it occurred at intervals on several days, the average number of days with 0.01 inch or more of precipitation being 5 in Colorado, 3 in New Mexico, and 4 in Texas. Over the region of heaviest precipitation covering the central and eastern portions of Texas, the monthly amounts ranged from 4 to over 5 inches. In the greater portion of west Texas and of New Mexico the monthly amounts were less than 0.25 inch.

The greatest monthly precipitation in Colorado was 3.10 inches at Cumbres; in New Mexico, 1.60 inch at Harveys Upper Ranch; and in Texas, 8.65 inches at Corsicana. There was no precipitation at Garnett, Colo.; Carrizozo and Liston, N. Mex.; and Theodore, Tex.; while at 25 other stations in New Mexico and at 4 in Texas the monthly amounts did not exceed 0.10 inch. Excessive precipitation of 2.50 inches or more in 24 consecutive hours occurred at a number of stations in central and eastern Texas, the greatest being 5.60 inches at Corsicana.

The snowfall over the upper reaches of the Rio Grande and Rio Pecos watersheds was much less than during the corresponding period of the previous year, and there was very little in the central and southern portions of New Mexico, and none in Texas beyond a few flurries.

**TEMPERATURE.**

The monthly mean temperature averaged considerably above the normal, the excess in general being greatest in the extreme upper Rio Grande Valley and least in the eastern portions of the district. Cold spells occurred on several days, with freezing temperature nearly to the upper coast, but there was no unusually severe weather during the month. The 4th was probably the warmest day, and the coldest weather occurred on the 29th or 30th in the greater portion of the district, with temperatures considerably below zero at the higher northern stations. The diurnal range of temperature varied from about 10° on the upper Texas coast to about 38° in the extreme upper Rio Grande watershed.

The highest and lowest temperatures reported were: In Colorado, 60° at Saguache on the 10th, and -20° at Hermit on the 29th; in New Mexico, 82° at Carlsbad on the 4th, and -13° at Chama on the 29th; and in Texas, 89° at Lufkin, Tilden, and Zapata on the 4th, and 8° at Mount Blanco on the 30th. The local monthly means ranged from 22.6° to 28.4° in Colorado; from 27.4° to 46.4° in New Mexico; and from 41.3° to 63.0° in Texas.

**PRECIPITATION.**

The precipitation over the Rio Grande watershed averaged only 0.40 inch. This is over 50 per cent less than the normal and about 0.13 inch less than the average for the preceding month. In a few localities moderately heavy amounts occurred, but over by far the greater part of the area the

deficiency was marked. The heaviest monthly precipitation was 3.10 inches at Cumbres, Colo. The precipitation over the Rio Pecos watershed was also decidedly deficient, the average being only 0.24 inch, which is 0.43 inch less than normal and only about one-half the amount reported for the preceding month. Only two stations in the extreme upper portion of the watershed had monthly amounts exceeding 1 inch. The greatest was 1.60 inch at Gallinas Planting Station.

A general excess of precipitation occurred over the Texas drainage basins, except those of the Nueces and Colorado, which showed a slight deficiency. The Colorado, however, had good rains over its lower portion south of Austin. In a general way the lower portions of these streams received much more rain than the upper. The following are the average monthly amounts in inches for the various watersheds: Nueces, 1.11; San Antonio, 2.42; Guadalupe, 3.48; Lavaca, 5.08; Colorado, 1.91; Brazos, 2.39; Trinity, 3.33; Neches, 5.10; Sabine, 4.42; and coastal plains, 2.31. These amounts are over 300 per cent greater than those reported for the preceding month.

**RIVER CONDITIONS.**

Notwithstanding some heavy rains in many localities of the Texas drainage basins, there was but little change in the flow of the rivers from that reported for the preceding month, as most of the precipitation was absorbed by the soil. There were no changes of consequence until the 23d, when the Trinity and Colorado rose from 5 to 6 feet in their lower portions, but the rise was only temporary. The Brazos rose 3 feet at Waco on the 29th, and the Trinity rose again on the last day of the month; this time 6 feet at Long Lake. However, the average discharge of the Texas streams was very low and is the lowest on record for December. The Rio Grande and Rio Pecos have been at low water during the entire month, and there was very little or no water available for irrigation, except in the lower portion of the Rio Grande.

**SNOWFALL IN THE MOUNTAINS.**

The heaviest monthly snowfall in the upper Rio Grande drainage basin was 39.8 inches in Colorado at Cumbres, and 23 inches in New Mexico at Red River Canyon; and in that of the Rio Pecos, 30 inches at Harveys Upper Ranch. At the close of the month the accumulated depth of snow in the Rio Grande drainage basin ranged from 1 inch at Conejos to 36 inches at Cumbres in Colorado, and from 2 inches at Fairview to 36 inches at Arroyo Seco in New Mexico. In that of the Rio Pecos the accumulated depths ranged from 3 inches at Palma to 30 inches at Harveys Upper Ranch. These amounts are much less than those reported at the close of December, 1909.

The following extracts from reports of Weather Bureau officials furnish special information on the snowfall condition in the Rio Grande and Rio Pecos drainage basins:

*Colorado.*—The season's snowfall up to December 31 was much less than for the corresponding period last year, and, as a whole, considerably less than the normal. In a few localities on the different watersheds approximately the average amount was noted, but the areas so favored are too small to make up for the general and marked deficiency in the water stored for late irrigation. The snow is generally unpacked, and there has been little drifting.—*F. H. Brandenburg, District Forecaster.*

*New Mexico.*—The snowfall during October, November, and December was light, much lighter than the normal, and considerably less than during 1909. The total average amount was just a little over 7 inches, while more



than 8 inches occurred in December, 1909, and the precipitation, as a whole, averaged almost three-quarters of an inch less than during the last quarter of 1909. The warmth of December left the mesas and lower mountains generally bare until the 26th-27th, and the snow that occurred at that time was mostly confined to the northern half and to the higher mountain districts. The outlook for irrigation water thus far is not promising. In the mountains of southern Colorado, at the headwaters of the San Juan and Rio Grande, the depth is much less than last year, and it has been much later in coming, hence is not so compact although reported evenly distributed. In northern New Mexico the precipitation has been light and, as a rule, the outlook is unfavorable. Farther southward precipitation has been light along the entire Rio Grande watershed within the Territory. A fair depth of snow occurred in the higher altitude at the headwaters of the Rio

Pecos, but the stored depth is small. Southward along the eastern mountain ranges practically no snow has occurred, and the warmth has largely dissipated that which fell.—*C. E. Linney, Section Director.*

## MISCELLANEOUS.

*Waxahachie.*—A strong northwest gale on the 5th filled the air with dust to such an extent that sunshine was cut off almost as on a cloudy day.

*Sealy.*—The farmers are busy preparing for their next season's crops. The monthly precipitation was the heaviest since October, 1909.



TABLE 1.—*Climatological data for December, 1910. District No. 8, Texas and Rio Grande Valley.*

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, at least one inch or more.	Number of clear days.	Number of partly cloudy days.		
Colorado.																			
Blanca.	Costilla.	7,865	1																Dr. L. C. Audrain.
Cumbres.	Conejos.	10,015	3																Mrs. Ida M. Lively.
Garnett.	Costilla.	7,576	17	24.8	+ 9.6	55	9†	- 6	30	49	0.00	- 0.26	1.03	0.0	0	14	16	11	Chas. Speiser.
Hermitt.	Hinsdale.	9,843						-20	29		0.06		0.27	11.0	3	10	12	9	Marion Mason.
La Veta Pass.	Costilla.	9,000	4								0.77		0.29	14.7	5	19	9	3	Marine D. Wright.
Manassa.	Conejos.	7,700	4	25.7		60	10	- 5	29†	48									J. B. Chapman.
Platoro.	do.	9,675	2		+ 8.1						1.40		0.35	27.0	7	19	6	6	Walter H. Hook.
Saguache.	Saguache.	7,740	18	28.4	+ 5.1	56	11	- 5	31	55	0.67	+ 0.42	0.20	7.2	4	16	1	14	Eugene Williams.
San Luis.	Costilla.	7,794	19	27.6	+ 5.1	57	9	- 2	30	50	0.15	- 0.55	0.09	1.5	4	17	9	5	P. B. Albright.
Wagon Wheel Gap.	Mineral.	9,235		22.6	+11.2	48	9	- 8	29	33	0.58	- 0.25	0.20	7.4	8	13	11	7	U. S. Weather Bureau.
New Mexico.																			
Agricultural College.	Dona Ana.	3,836	44	46.4	+ 3.9	77	4	17	30	45	0.17	- 0.27	0.10	0.0	2	14	16	1	N. M. Agri. College.
Alamogordo (near).	Otero.	4,338	9	43.0		75	4	13	23	45	0.05	- 0.58	0.05	0.0	1	11	17	3	Geo. C. Bemis.
Alamogordo.	do.	4,320	1								0.06		0.06	0.0	1				Agent E. P. & S. W. R. R.
Alamos Ranch.	Sandoval.	7,500									0.30		0.21	4.0	2	21	3	7	Harold H. Brooks.
Albuquerque.	Bernalillo.	5,000	34								0.22	- 0.17	0.15	0.7	3	21	9	1	Pitt Ross, C. E.
Ancho.	Lincoln.	6,112	1								0.21		0.12	1.7	2	28	0	3	Agent E. P. & S. W. R. R.
Artesia.	Eddy.	3,350	1	43.6		77	9	14	30	46	0.04		0.02	T.	2	13	13	5	Will Benson.
Aspen Grove Ranch.	Rio Arriba.	9,000	1								0.71		0.35	12.6	6	11	16	4	Junius D. Maupin.
Bateman's Ranch.	do.	8,900	1								0.68		0.40	13.5	5	19	11	1	John W. Bateman.
Bluewater.	Chaves.	6,732	8	31.3		65	10	2	23	52	0.17	- 0.19	0.13	2.0	2	15	15	1	Bluewater Dev. Co.
Boat.	Lincoln.	4,154	1	39.4		72	10	12	23	46	0.07		0.07	0.0	1	18	7	6	D. C. Savage.
Capitan.	Lincoln.	6,348	1								0.27		0.10	2.5	3	5	15	11	Agent E. P. & S. W. R. R.
Carlbad.	Eddy.	3,120	15	45.6	+ 2.4	82	4	11	30	54	0.08	- 0.40	0.04	0.0	2	15	10	6	U. S. Reclamation Service.
Carrizozo.	Lincoln.	5,429	2	40.0		65	2†	14	31	30	0.00		0.00	0.0	0	25	6	0	Agent E. P. & S. W. R. R.
Carson Park.	Taos.	7,650									1.00		0.44	15.0	6				Lester S. Myers.
Chama.	Rio Arriba.	7,851	11	27.4	+ 0.6	52	3†	-13	29	39	1.31	- 0.96	0.45	18.0	6	21	4	6	F. C. Johnson.
Clondoroff.	Otero.	8,650	7	33.6		58	1†	0	31	39	0.75		0.40	8.2	3	14	9	8	Agent E. P. & S. W. R. R.
Corona.	Lincoln.	6,666	1								0.05		0.01	0.6	5	14	6	11	Do.
Coyote.	do.	5,800	1								0.20		0.13	0.0	2	11	4	16	Do.
Cundiyo.	Santa Fe.	6,889	1								0.44		0.26	6.3	2	16	7	8	Teofilo Vijil.
Demonstration Farm.	San Miguel.	6,800	1								0.37		0.30	2.0	2				Erb & Westerman.
Duran.	Torrance.	6,272	1								T.		T.	T.	0	24	1	6	Agent E. P. & S. W. R. R.
Elk (near).	Chaves.	7,400	11										T.	T.					Boyd Williams.
Escondido.	Otero.	4,014	1								0.04		0.04	0.0	1	12	11	8	Agent E. P. & S. W. R. R.
Espanola.	Rio Arriba.	5,590	12	33.2	+ 4.1	68	4	8	30	41	0.23	- 0.09	0.16	2.0	2	15	11	5	Mrs. E. F. McBride.
Estancia.	Torrance.	6,140	5	35.6		72	2	3	31	57	0.17		0.09	4.0	2	15	13	3	Agent N. M. Central R. R.
Fort Stanton.	Lincoln.	6,231	32	38.2	+ 2.0	69	11	8	30	48	0.23	- 0.61	0.10	1.8	4	15	12	4	U. S. Sanitarium.
Fort Sumner.	Guadalupe.	3,960	2	37.4		70	3†	9	29	49	0.10		0.10	0.0	1	25	1	5	F. A. Manzanares.
Gallinas.	Lincoln.	6,335	1								0.30		0.12		3	19	5	7	Agent E. P. & S. W. R. R.
Gallinas Planting Sta.	San Miguel.	7,500	3	34.8		65	2	5	29	46	0.42		0.21	6.0	5	18	13	0	U. S. Forest Service.
Harvey's Upper Ranch.	do.	9,400	1								1.60		0.47	30.0	9	15	15	1	S. B. Warner.
Hillsboro.	Sierra.	5,224	13								0.84		0.49	14.3	4	15	7	9	Dr. F. I. Givens.
Hodges.	Taos.	8,484	1																Austin Porter.
Hondo Reservoir.	Chaves.	3,904	1	42.0		78	9	14	31	52	T.		T.	T.	0	20	6	5	U. S. Reclamation Service.
Hops.	Eddy.	4,000	3																A. W. Board.
James Springs.	Sandoval.	6,100		35.1		59	9	10	29	32	0.62		0.30	5.2	4	19	3	9	Linus L. Shields.
Knowles (near).	Eddy.	4,300		41.6		75	4†	9	30	51	T.		T.	0.0	0	18	9	4	J. W. Mosley.
Laguna.	Valencia.	5,840	5	37.1		67	1†	11	31	43	0.12		0.12	1.5	1				Gus Weiss.
Lagunita.	Guadalupe.	4,500	5	38.6		68	2	9	30	53	0.09		0.06	0.8	2	12	10	9	P. A. Turnbull.
Lake Valley.	Sierra.	5,412	5								0.18		0.14	0.0	2	33	8	0	Wm. F. Keil.
Las Vegas.	San Miguel.	6,384	23																Dr. W. C. Bailey.
Liston.	Chaves.	5,000									0.00		0.00	0.0	0	23	4	4	H. G. Liston.
Las Luna (near).	Valencia.	4,900	20	34.8	+ 0.8	63	4	7	30	43	0.12	- 0.35	0.12	T.	1	8	20	3	Richard Pohl.
Magdalena.	Socorro.	6,557	5	36.8		68	10	9	29	46	0.10		0.10	T.	1	15	14	2	Wm. Fender.
Mineral Hill.	San Miguel.	7,050	5								0.22		0.11	2.5	3	6	23	2	W. M. Nelson.
Monterey.	Otero.	4,436	1								0.10		0.05	0.0	2	22	1	8	Agent E. P. & S. W. R. R.
Mountainair.	Torrance.	6,547	8	36.5		64	10	11	29	38	0.45		0.34	5.0	3	21	8	2	Mrs. John W. Corbett.
Newman.	Otero.	3,989	1			70	3†				0.45		0.27	6.0	2	21	1	9	Agent E. P. & S. W. R. R.
Noria.	Dona Ana.	4,114	1			74	10†				0.80		0.80		1	18	5	8	Do.
Orange.	Otero.	5,000	1																Jas. Brownfield, Jr.
Orogrande.	do.	4,171	1			70	9†				0.05		0.05	0.0	1	18	5	8	Agent E. P. & S. W. R. R.
Oscuro.	Lincoln.	5,016	1								0.26		0.14		2				Eugene F. Jones.
Otis.	Eddy.	3,100	1								0.02		0.02	0.0	1	25	1	5	O. H. Johnson.
Otto.	Santa Fe.	6,200	1								0.18		0.18	2.5	2				Agent E. P. & S. W. R. R.
Pastura.	Guadalupe.	5,285	1								0.08		0.08	1.0	2				Geo. A. Ellis.
Picatas (near).	Bernalillo.	8,000		35.1		60	10	8	29	34	0.68		0.32	7.2	3	20	8	3	P. D. Southworth.
Plecho (near).	Lincoln.	5,000																	L. P. Adair.
Plainview.	Chaves.	4,300																	Mrs. Lucy R. Penn.
Red River Canyon.	Taos.	8,950	12	27.4	+ 3.5	66	2†	-4	28†	62	1.37		0.35	23.0	7	15	14	2	Chas. H. Raitt.
Rincon.	Dona Ana.	4,030	12	44.8	+ 5.5	77	11	10	30	52	0.10	- 0.37	0.10	0.0	1	13	12	6	U. S. Reclamation Service.
Rio Grande Dam.	Sierra.	4,265	12	42.0		73	4	13	30	45	T.	- 0.44	T.	0.0	0	25	4	2	W. H. Martin.
Roswell.	Socorro.	5,910	5	37.8		64	11	13	30	29	0.11		0.04	0.8	4	19	6	6	U. S. Weather Bureau.
Roswell.	Chaves.	5,578	12	41.8	+ 0.6	77	9	10	30	52	0.01	- 0.54	0.01	T.	1	8	16	7	Agent A. T. & S. F. R. R.
San Marcial.	Socorro.	4,439	14	39.2	+ 1.1	68	7	9	29	52	0.36		0.32	4.5	2	23	4	4	Dr. Chas. M. Grover.
San Rafael.	Valencia.	6,509	6	36.1		73	1	9	18	53	0.30	- 0.46	0.14	4.5	5	16	14	1	Section Center.
Santa Fe.	Santa Fe.	7,013	37	32.0	+ 1.7	56	10	7	29	30	0.11		0.03	1.1	4	18	3	10	Candelario Martinez.
Santa Fe Canyon.	do.	8,000									0.03		0.02	T.	2	18	12	1	John L. Chapman.
Santa Rosa.	Guadalupe.	4,624	10	38.7		71	2	14	23†	52	0.03	- 0.66	0.06	0.0	1	26	2	3	J. J. Leeson.
Socorro.	Socorro.	4,600	18	42.6	+ 0.5	74	5	9	30	56	0.06	- 0.60	0.06	3.0	1	0	27	4	Henry Winan.
Stanley.	Santa Fe.	6,317	1	31.0		70	11	0	23	55	0.80		0.79	0.0	2	17	4	10	Agent So. Pac. Ry.
Straus.	Dona Ana.	4,080	11								0.91	+ 0.44	0.79	0.0	2				Swastika S. & L. Co.
Swastika Ranch.	Valencia.	6,400																	J. R. Nappier.
Taft.	Guadalupe.	5,000									0.05		0.05	0.0	1	15	10	6	U. S. Forest Service.
Tajique (near).	Torrance.	6,900									0.35		0.25	2.0	1	14	14	3	Alex. Gusdorf.
Taos.	Taos.	6,983	12	32.8	+ 5.8	62	20†	2	31	44	0.71	+ 0.03	0.23	11.3	4	20	10	1	Leocadio Martinez.
Taos Canyon.	do.	8,959	1								1.12		0.40	10.9	7				Agent E. P. & S. W. R. R.
Tecolote.	Lincoln.	6,539	1								0.37		0.15	1.1	4	22	0	9	Do.
Three Rivers.	Otero.	4,559	1								0.02		0.02	0.0	1	19	3	9	U. S. Forest Service.
Tijeras Canyon.	Bernalillo.	6,214									1.32		0.65						



TABLE 1.—Climatological data for December, 1910, District No. 8—Continued.

Stations.	Counties.	Elevation.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast or cloudy days.	Prevailing wind direction.
Texas.																				
Abilene.	Taylor.	1,738	25	46.3	+ 1.3	78	4	25	6	41	1.05	- 0.08	0.81	0.0	4	10	10	11	s.	U. S. Weather Bureau.
Albany.	Shackelford.	1,429	16	45.0	0.0	83	4	18	30	48	1.20	- 0.47	0.56	0.0	3	24	2	5	...	N. L. Bartholemew.
Anahuac.	Chambers.	23	1								4.09	- 1.33	1.33	0.0	7	12	7	12	nw.	B. H. Collins.
Austin.	Travis.	593	54	53.6	+ 1.3	76	4	32	30	32	5.20	+ 2.86	3.00	0.0	7	12	7	12	nw.	A. Deussen.
Ballinger.	Runnels.	1,637	15	46.4	+ 0.9	80	3	23	9	50	0.58	- 0.55	0.33	0.0	2	16	2	13	n.	E. M. Eubank.
Barstow.	Ward.	2,573	3																	W. H. Denis.
Bay City.	Matagorda.	53									3.40	- 1.70	1.70	0.0	4	9	9	13	n.	E. C. Quereau.
Beaumont.	Jefferson.	29	13	53.6	+ 0.2	80	10	30	2	30	4.86	+ 1.60	2.27	0.0	7	9	0	22	no.	John Bender.
Beeville.	Bee.	225	14	58.4	+ 3.8	85	10	30	7	41	1.42	- 0.41	0.42	0.0	6	10	11	10	se.	L. F. Dickey.
Big Springs.	Howard.	2,396	12	46.1		79	4	16	30	46	0.12	- 0.32	0.07	0.0	2	22	5	4	s.	B. Reagan.
Blanco.	Blanco.	1,350	14	52.9	+ 4.0	80	11	28	1	40	4.19	+ 2.48	2.14	0.0	7	16	10	5	n.	R. C. Crist.
Boerne.	Kendall.	1,412	18	53.2	+ 4.0	82	10	29	1	42	4.41	+ 2.36	2.75	0.0	6	8	13	10	n.	F. W. Schweppe.
Booth.	Fort Bend.	81	9								5.46	- 3.20	3.20	0.0	10	10	2	19	n.	T. R. Booth.
Boquillas.	Brewster.																			J. O. Langford.
Bowie.	Montague.	1,113	16	46.0	+ 0.3	71	27	22	1	32	1.40	+ 0.44	0.63	0.0	3	16	2	13	n.	Craig Anderson.
Brazoria.	Brazoria.	25	21	58.6	+ 2.6	81	10	23	7	43	2.06	- 1.24	0.65	0.0	9	18	5	8	n.	Mrs. M. A. Stevens.
Brazos.	Palo Pinto.	801	1								0.38	- 0.38	0.38	0.0	1	13	10	8	s.	Robt. E. Boyett.
Brenham.	Washington.	350	21	54.0	- 0.1	80	4	33	0	37	5.05	+ 2.57	1.60	0.0	9	8	5	18	n.	Mrs. B. P. Sloan.
Bridgeport.	Wise.	754	1								1.63	- 0.77	0.77	0.0	3	15	4	12	n.	Claude Strange.
Brighton.	Nueces.	12	14	61.5	+ 6.1	79	12	40	6	27	1.73	+ 0.42	0.72	0.0	4	11	4	16	nw.	G. H. Ritter.
Brownsville.	Cameron.	38	21	63.0	+ 1.5	81	12	37	24	35	0.77	- 0.68	0.27	0.0	5				s.	U. S. Weather Bureau.
Brownwood.	Brown.	1,342	20	46.4	+ 0.3	80	4	21	30	45	0.54	- 1.06	0.33	0.0	4	12	12	7	n.	Mrs. Pearl Smith.
Cameron.	Milam.		2	51.8		79	4	28	2	45	3.88	- 1.66	0.30	0.0	7	21	6	4	s.	J. E. Watts.
Carmona.	Polk.	330	2	52.2		80	4	20	7	38	5.21	- 2.55	0.0	8	14	5	12	s.	M. S. Splitter.	
Claytonville.	Fisher.	2,100	15	45.6		80	4	16	30	49	0.40	- 0.67	0.30	0.0	2	12	14	5	n.	Wm. Lanus.
Coleman.	Coleman.	1,710	16	50.0	+ 1.8	76	4	27	6	36	0.97	- 0.53	0.58	0.0	2	12	15	4	n.	J. E. Stevens.
College Station.	Brazos.	308	19	54.8	+ 1.3	80	4	26	7	36	6.72	+ 3.38	2.31	0.0	9	17	3	11	n.	Prof. G. S. Fraps.
Colorado.	Mitchell.	2,066	16	44.4	+ 3.3	82	3	12	30	52	0.18	- 0.56	0.10	0.0	3				n.	R. M. Webb.
Columbia.	Brazoria.	34	21	59.6	+ 4.0	80	10	27	24	35	3.45	+ 0.25	1.60	0.0	5	18	0	7	s.	R. B. Loggins.
Columbus.	Colorado.	206	6								5.12	- 2.84	0.0	6	9	11	11	nw.	Mrs. Sophie Bridge.	
Corpus Christi.	Nueces.	20	23	61.0	+ 4.4	81	10	44	6	22	0.98	- 0.34	0.71	0.0	6	10	8	13	se.	U. S. Weather Bureau.
Corsicana.	Navarro.	445	21	48.7	- 0.5	72	3	27	6	44	8.65	+ 5.88	5.60	0.0	8	17	0	14	nw.	E. L. Gibson.
Crockett.	Houston.	350	6	53.0		80	10	26	2	34	5.59	- 2.36	0.0	8	10	8	13	s.	A. M. Rencher.	
Cuero.	De Witt.	177	21	57.8	+ 3.6	85	11	26	7	53	4.68	+ 2.59	2.79	0.0	8	9	1	21	n.	H. R. Probes.
Dallas.	Dallas.	466	21	46.5	- 0.7	76	4	23	2	46	1.77	- 0.80	0.88	0.0	7	14	1	16	n.	G. A. Eisenlohr.
Danewang.	Wharton.	145	14	57.6	+ 5.0	80	10	26	7	41	3.55	- 0.19	1.75	0.0	3	17	1	13	se.	H. P. Hermanson.
Decatur.	Wise.	1,047	14								1.10	- 0.27	1.10	0.0	1	15	15	1	n.	W. & D. C. Ry.
Del Rio.	Valverde.	952	4	53.1	+ 0.7	86	10	22	30	50	0.29	- 1.27	0.27	0.0	3	15	8	8	se.	U. S. Weather Bureau.
Devine.	Medina.	653		55.4		84	4	28	5	50	0.96	- 0.43	0.0	3	23	0	8	nd.	M. A. Keller.	
Dialville.	Cherokee.	575	6	51.6		76	10	26	7	40	5.03	- 2.75	0.0	8	15	7	9	s.	J. M. B. McKnight.	
Dilley.	Frio.	569									0.99	- 0.99	0.0	1						John W. Miller.
Dublin.	Erath.	1,466	15	49.2	+ 2.2	74	4	25	30	30	0.60	- 1.20	0.40	0.0	3	12	9	10	s.	Jno. O. Shafer.
Duval.	Travis.	820	21	53.8	+ 0.7	76	4	32	30	28	4.20	+ 1.32	2.44	0.0	5	12	8	11	nw.	J. C. Edgar.
Eagle Pass.	Maverick.	800	21	53.6	+ 0.5	82	12	24	30	44	0.14	- 0.75	0.08	0.0	3	15	11	5		Jos. Metcalfe.
Edna.	Jackson.	71	1								4.20	- 1.55	0.0	4						E. L. Faires.
El Paso.	El Paso.	3,762	1	46.4	+ 1.6	72	4	22	30	37	0.30	- 0.22	0.25	0.0	2	11	14	6	nw.	U. S. Weather Bureau.
Encinal.	La Salle.	558	2	55.6		83	10	34	24	38	0.71	- 0.71	0.0	1	15	7	9	no.	H. C. Braden.	
Fairland.	Burnet.	1,000	22	53.2		88	18	27	30	43	1.63	- 0.35	0.45	0.0	5	16	6	9	s.	R. L. Bush.
Falfurrias.	Starr.		3	58.8		88	10	27	7	49	1.68	- 0.55	0.0	5	20	3	8	se.	W. A. Gardner.	
Flatonia.	Fayette.	465	2	56.8		83	10	32	7	37	3.61	- 1.03	0.0	7	9	8	14	s.	Fred W. Laux.	
Flint.	Smith.	483	23	50.0		75	4	20	2	34	5.37	- 2.37	0.0	8	11	10	10	n.	F. C. C. Carter.	
Fort Clark.	Kinney.	1,030	23	50.4	+ 1.3	80	3	22	29	40	0.52	- 0.53	0.32	0.0	3	12	12	7	n.	Post Hospital.
Fort McIntosh.	Webb.	460	34	61.0	+ 8.1	88	10	34	0	49	1.00	- 0.09	1.00	0.0	1	13	5	13	se.	Do.
Fort Stockton.	Pecos.	3,050	13	49.6	+ 3.8	84	4	14	30	50	0.03	- 0.66	0.03	0.0	1	9	18	4	n.	H. H. Butts.
Fort Worth.	Tarrant.	670	15	47.9	+ 0.4	77	4	26	6	37	1.23	+ 0.01	0.85	0.0	6	12	11	8	s.	U. S. Weather Bureau.
Fredericksburg.	Gillespie.	1,742	21	51.2	+ 1.7	80	4	27	30	39	2.35	+ 0.77	0.91	0.0	5	14	8	9	s.	Arthur Striegler.
Gainesville.	Cooke.	738	21	44.4	+ 1.2	71	27	22	2	32	1.71	- 0.38	1.02	0.0	4					J. L. Hickson.
Galveston.	Galveston.	69	40	57.8	+ 1.5	73	10	37	6	24	3.58	- 0.15	1.17	0.0	9	8	9	14	se.	U. S. Weather Bureau.
Gatesville.	Coryell.	705	6	50.0		79	4	25	2	50	2.40	- 1.00	0.0	4	14	12	0			John Ryan.
Georgetown.	Williamson.	750	16	50.5	+ 1.0	81	10	26	7	48	3.32	+ 1.08	1.84	0.0	0	15	7	9	n.	Prof. R. F. Young.
Gonzales.	Gonzales.	299	5								2.40	- 0.66	0.66	0.0	7	12	2	17	n.	J. M. Johnson.
Graham.	Young.	1,040	11	50.2	+ 3.6	76	5	22	9	45	2.00	+ 0.63	0.80	0.0	3	22	2	7	n.	C. W. Johnson.
Grand Saline.	Van Zandt.										4.50	- 2.05	0.0	6	10	13	8	n.	P. E. Whittemore.	
Grapevine.	Tarrant.	670	20	48.4	+															



TABLE 1.—Climatological data for December, 1910. District No. 8—Continued.

Stations.	Counties.	Elevation.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
Texas—Continued.																				
Marfa.....	Presidio.....	375	2								0.20		0.10	0.0	2		19	10	nw.	R. K. Colquitt.
Marshall.....	Harrison.....	375	1	49.2		77	4	21	7	32	6.26		2.38	0.0	9	2	19	10	nw.	Lee Scott.
Matagorda.....	Matagorda.....	537	6	48.6		77	4	26	6†	42	1.89		0.70	0.0	3	13	8	10	s.	W. E. McNabb.
Mexia.....	Limestone.....	537	3	48.6		77	4	26	6†	42	3.34		1.35	0.0	6	5	6	20	s.	Miss Josephine Newman.
Midland.....	Hidalgo.....	65									0.84		0.44	0.0	4	16	11	4	se.	H. J. Elder.
Mission.....	Chambers.....	65									6.12		2.38	0.0	10	14	5	12	se.	L. H. Romig.
Mont Belvieu.....	Pecos.....	2,750	22	41.7	0.0	75	4	8	30	30	0.26	-0.35	0.26	0.0	1	13	7	11	n.	A. R. Shearer.
Mountain View.....	Crosby.....	271	11	53.6	+0.7	77	12	26	7	38	2.36	+0.09	1.01	0.0	5	13	10	8	s.	Lucius W. Gosselin.
Mount Blanco.....	Comal.....	720	21	53.6	+0.7	77	12	26	7	38	2.36	+0.09	1.01	0.0	5	13	10	8	s.	H. C. Smith.
Nacogdoches.....	Anderson.....	510	28	50.9	+1.5	76	4	28	30	29	3.23	-0.44	1.65	0.0	10	8	7	16	n.w.	Miss Mary Hofmann.
New Braunfels.....	Hood.....	1,000	20	59.7		82	27	34	6	32	3.25	+1.13	0.53	0.0	3					J. Giesecke.
Palestine.....	Frio.....	629	4	56.3		81	12	22	7	48	1.27		0.61	0.0	6					U. S. Weather Bureau.
Panther.....	Wharton.....	162	4	56.3		81	12	22	7	48	4.46		1.39	0.0	8	7	10	14		E. H. Snider.
Pearsall.....	Hale.....	3,370	18	41.3		76	9	13	30	56	0.18	-0.35	0.16	0.0	2	17	7	7	s.w.	Ernest De Vilbiss.
Pierce.....	Calhoun.....	30	9	59.7		82	27	34	6	32	3.25		1.47	0.0	4	15	6	10	n.	R. B. Pointer.
Plainview.....	Garza.....	37	1	57.94		85*	4†	31	8	42*	1.18		0.18	0.0	2	22	6	3	s.w.	J. F. Sander.
Port Lavaca.....	Nueces.....	109	6	46.6		79	4	21	30	51	1.06	0.00	0.62	0.0	5	23	3	6	n.	W. L. Beckford.
Post City.....	Walker.....	169	6	46.6		79	4	21	30	51	1.06	0.00	0.62	0.0	5	23	3	6	n.	W. L. Dodd.
Ricardo.....	Coke.....	1,850	11	46.6		79	4	21	30	51	1.06	0.00	0.88	0.0	3	22	3	6	sw.	Lindsay Waters.
Riverside.....	Tyler.....	136	6	56.0		84	10	28	7	40	1.56		1.99	0.0	4	13	3	13	n.w.	Mrs. C. W. Higdon.
Robert Lee.....	Atascosa.....	558	3	56.0		84	10	28	7	40	1.56		0.60	0.0	5	16	9	6	sw.	D. W. Bellamy.
Rockland.....	Karnes.....	308	15	56.0		83	4†	31	7†	40	1.87	-0.44	1.09	0.0	3					W. F. M. Ross.
Roseville.....	Uvalde.....	964	6	56.0		83	4†	31	7†	40	1.11	-0.44	0.40	0.0	3					Reiffert & Froese.
Runge.....	Bell.....	37	1	57.94		85*	4†	31	8	42*	1.18		0.18	0.0	2	22	5	4	n.e.	Jas. Johnson.
Sabinal.....	Tom Green.....	1,847	19	48.2	+2.3	80	10	33	7	32	1.69	+0.13	0.35	0.0	4	7	5	10	n.	L. M. Crockett.
Salado.....	Bexar.....	701	25	55.4	+2.3	80	10	33	7	32	1.69	+0.13	0.35	0.0	4	7	5	10	n.	Sam Crother.
San Angelo.....	San Augustine.....	360	1	51.0		78	28	21	7		5.28		1.46	0.0	10	9	10	12	se.	U. S. Weather Bureau.
San Antonio.....	Hidalgo.....	360	1	51.0		78	28	21	7		5.28		1.46	0.0	10	9	10	12	se.	F. A. Wilson.
San Augustine.....	Hidalgo.....	360	1	51.0		78	28	21	7		5.28		1.46	0.0	10	9	10	12	se.	J. B. McAllen.
San Juanito.....	Hays.....	360	1	51.0		78	28	21	7		5.28		1.46	0.0	10	9	10	12	se.	Miss L. C. Ford.
San Marcos.....	San Saba.....	360	1	51.0		78	28	21	7		5.28		1.46	0.0	10	9	10	12	se.	Jas. Burns.
San Saba.....	Nueces.....	1,712	6	49.6	+2.3	85	4	21	24†	49	0.60	+2.25	2.50	0.0	6	15	0	16	n.	J. B. Wright, jr.
Santa Gertrudes.....	San Saba.....	1,712	6	49.6	+2.3	85	4	21	24†	49	0.60	+2.25	2.50	0.0	6	15	0	16	n.	F. M. Deaver.
Santa Gertrudes.....	Nueces.....	1,712	6	49.6	+2.3	85	4	21	24†	49	0.60	+2.25	2.50	0.0	6	15	0	16	n.	W. A. Dolan.
Seymour.....	Baylor.....	1,320	4	45.4		72	4	23	9	48*	0.94		0.62	0.0	3	19*	4*	6*	n.	Mike Murphy.
Somerville.....	Burleson.....	251	1	55.2		80	10†	27	7	34	4.00		1.40	0.0	7	11	0	20	n.	Cunningham Sugar Co
Sonora.....	Sutton.....	2,200	7																	W. A. Clark.
Sugarland.....	Fort Bend.....	79	12																	U. S. Weather Bureau.
Sutherland.....	Wilson.....	383	9	51.8	+1.2	78	4	30	6	32	3.98	+1.36	2.38	0.0	7	15	6	10	n.	W. Goodrich Jones.
Taylor.....	Williamson.....	630	16	49.4	-0.2	77	11	29	6†	37	2.79	-0.14	1.20	0.0	5	14	6	11	n.	W. H. Gibbs.
Temple.....	Bell.....	630	16	49.4	-0.2	77	11	29	6†	37	2.79	-0.14	1.20	0.0	5	14	6	11	n.	J. K. Ball.
Theodore.....	Winkler.....										0.00		0.00	0.0	0					Wm. Kuykendall.
Thurber.....	Frath.....										1.16		0.61	0.0	2					W. H. Gisler.
Tilden.....	McMullen.....	4	58.6			89	4	25	7	57	0.95		0.60	0.0	5	10	12	9	nw.	F. M. Getzenaner.
Tivoli.....	Refugio.....	937	2	54.8		88	10	29	7†	32	0.39		1.30	0.0	4	10	8	13		T. M. Williams.
Uvalde.....	Uvalde.....	280	10								4.84	+2.13	3.10	0.0	5	15	0	16	n.	C. C. Zirjacks.
Valley Junction.....	Robertson.....	187	12	59.2	+3.4	85	10†	31	7	48	3.15	+0.93	1.36	0.0	3	13	6	18	n.	E. H. Hall.
Victoria.....	Victoria.....	424	21	49.4	-1.5	79	4	28	2†	44	3.70	+1.20	1.68	0.0	4	16	0	15	n.	C. D. Longserre.
Waco.....	McLennan.....	556	14	45.9	0.0	78	4	20	2	51	1.61	-0.87	0.77	0.0	6	16	2	13	n.	Miss J. Stickfort.
Waxahachie.....	Ellis.....	864	21	45.8	-0.5	72	4†	23	30	39	1.20	-0.78	0.67	0.0	4	15	4	12	s.	Mrs. F. M. Hughes.
Weatherford.....	Parker.....	105	8																	W. W. Gibbard.
Wharton.....	Wharton.....	524	5	49.0		74	4	25	7	39	4.30		2.25	0.0	5	13	7	11	n.	F. H. Earnest.
Willis Point.....	Van Zandt.....	324	5	49.0		74	4	25	7	39	4.30		2.25	0.0	5	13	7	11	n.	
Zapata.....	Zapata.....	300	1	61.2		89	4	30	7	41	0.49		0.35	0.0	3	14	7	10	se.	

- \* , b , c , etc. , indicate , respectively , 1 , 2 , 3 , etc. , days missing from the record.  
† Precipitation included in that of the next measurement.  
\*\* Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.  
† Also on other dates.  
‡ Separate dates of falls not recorded.  
§ Data are from standard instruments not supplied by the U. S. Weather Bureau.  
|| Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.  
|| Estimated by observer.  
|| Precipitation for the 24 hours ending on the morning when it is measured.  
T. Precipitation is less than 0.01 inch rain or melted snow.



Stations.	River basins.	Day of month.																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<i>Colorado.</i>																																		
Blanca	Rio Grande			.06	.40						T.		.38								.18	.29	.19		T.	T.	1.03	.41	.09	T.		.07	3.10	
Cumbres	do																					.29											0.00	
Garnett	do			T.	.12						T.	T.		.06	.12						.27	.29				T.	T.	.09	.27		T.		0.66	
Hermit	do																																0.77	
La Veta Pass	do																																	
Manassa	do																																1.40	
Platoro	do				.16							T.	T.	.35								.13					.18	.32	.12				0.67	
Saguache	do				T.										.09						.20	.04			.20		.15	.12					0.15	
San Luis	do				T.																							.01	T.	.01				0.88
Wagon Wheel Gap	do			.12	.02							T.		.02								.13	T.	.03			.04		.20	T.			.02	
<i>New Mexico.</i>																																		
Agricultural College	Rio Grande														.10		.07											.05					0.05	
Alamogordo (near)	do																																0.06	
Alamogordo	do																																0.30	
Alamos Ranch	do				T.																												0.22	
Albuquerque	do																																0.21	
Ancho	do													.02	.02																		0.04	
Artesia	Pecos												.06															.35	.03				1.4	
Aspen Grove Ranch	Rio Grande																																0.71	
Batemans Ranch	do																																	



TABLE 2.—Daily precipitation for December, 1910. District No. 8—Continued.

Stations.	River basins.	Day of month.																															Total.		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
Texas—Continued.																																			
Bay City	Colorado	T.												.15				1.05					1.70							0.50	.88	T.	3.40		
Beaumont	Neches										.08	T.		T.		.71	.52	.33						2.27					.07			T.	4.86		
Beville	Coast														.40	T.	.08	.42	T.				.06	.37							.10		1.42		
Big Springs	Colorado												T.	.07	.05																		0.12		
Blanco	Guadalupe														.05	.56	.04	.00						.02	2.14						.78		4.19		
Boerne	San Antonio													.10	.22	.01	1.10						2.75										4.41		
Booth	Brasos													.15	.30		.10	.82					.03	3.20						.60	.10	.06	5.46		
Boquillas	Rio Grande																																		
Bowie	Trinity														.40	.37															.65		1.49		
Brasoria	Brasos														T.	.04	.38	.21	.01				.44	.28			.02				.65	.03	2.06		
Brasos	do														.38																		0.38		
Brenham	do														.30	1.47	T.	.06	1.03	T.				.12	1.60						.38	.05	.04	5.05	
Bridgeport	Trinity														.30	.56															.77			1.63	
Brighton	Coast														.28	.13	.72	.60																1.73	
Brownsville	Rio Grande														.27	T.	.14	.14							.21						T.	T.	.01	0.77	
Brownwood	Colorado														.07	.03	.11																	0.54	
Cameron	Brasos														.08	.55	.30	.45	T.					1.66							.81	T.	.03	3.88	
Carmona	Neches														1.47	.26	.14						2.55	.05									.09	5.21	
Claytonville	Brasos														T.	.30	.10																0.40		
Coleman	Colorado														T.	.58																	0.97		
College Station	Brasos														1.86	.43	.23						2.31	.03						.02	.68	.05	6.72		
Colorado	Colorado														.10	.02	.06																0.18		
Columbia	Brasos															T.		.57	.43				1.60										3.45		
Columbus	Colorado														1.32	.42	.04	.46						2.84									.05	5.12	
Corpus Christi	Coast														.17	T.		.31	.40					.03							.06	T.	.01	0.98	
Coriscana	Trinity														.09	.06	.80	.02						1.95							5.60	.10		8.65	
Crockett	do														1.40	.20	.16	.60					2.36							.04	.71	.12		5.59	
Cueroll	Guadalupe														1.75	1.04	.10	.05	.65	.04				.97							.08			4.68	
Dallas	Trinity														.10	.62	.05						.04	.02							.88	.06		1.77	
Danevang	Coast														1.75				1.15															3.55	
Decatur	Trinity																																	1.10	
Del Rio	Rio Grande														.14	.13	.02																	T.	0.29
Devine	Nueces															.43	.36							.17										0.36	
Dialville	Neches														.05	.70	.10	.05	.62					2.75								.70	T.	.06	5.03
Dilley	Nueces														.99																				0.99
Dublin	Brasos														T.	.40	.15															.05		0.60	
Duval	Colorado														.12	.58	.15	.91						2.44										4.20	
Eagle Pass	Rio Grande														.08	.04	T.	.02																0.14	
Edna	Lavaca														1.30		.70						1.55											4.20	
El Paso	Rio Grande														T.	.25	T.						.06											0.30	
Encinal	Nueces																.71																	0.71	
Fairland	Colorado															.20	.20	.37						.41										1.63	
Falfurrias	Coast														.53	.10	.55	.46	.04															1.68	
Flatonis	Guadalupe														1.03	.66	.06	.72	T.															3.61	
Flint	Neches														.16	.03	.40																	5.37	
Fort Clark	Rio Grande														T.	.32	T.	.10	T.															.02	1.00
Fort McIntosh	do																																		0.82
Fort Stockton	Pecos														T.	T.	T.	T.																0.03	
Fort Worth	Trinity														.02	.83	.01	.01																1.23	
Fredericksburg	Colorado														.10	.17		.75																2.35	
Gainesville	Trinity														.02	.53	.14																	1.71	
Galveston	Coast														.07	.03	.95	.33	.39															3.58	
Gatesville	Brasos															.55			.10															2.40	
Georgetown	do														.01	.07	.47	.20	.42															3.32	
Gonzales	Guadalupe														.30	.66	.09	.54																2.40	
Graham	Brasos														T.	.45	.80																	2.00	
Grand Saline	Sabine														.16	.26	.16	T.																4.50	
Grapevine	Trinity														.01	.48	.05																	0.93	
Greenville	Sabine														.35																			1.85	
Hallettsville	Lavaca																																		



	Total.
	3.40
	4.86
	1.42
	0.12
	4.19
36	4.41
	5.46
	1.40
	2.06
04	0.38
	5.05
01	1.05
	0.77
39	3.88
	5.21
	0.40
	0.97
	6.72
	0.18
	3.45
	5.12
	0.98
	8.65
59	5.59
	4.68
	1.77
	3.55
	1.10
	0.29
	0.96
	5.03
	0.99
	0.60
	4.20
	0.14
	4.20
	0.30
	0.71
	1.63
	1.68
12	3.61
	0.52
	1.00
	1.23
14	2.35
	1.71
3	3.58
	3.32
20	2.00
	0.93
	4.50
22	1.85
	5.96
	1.20
	0.30
	0.60
	4.15
	2.73
	2.03
	2.02
	4.90
	7.11
	0.25
	3.65
	0.85
	3.45
	3.57
	0.48
	1.28
	5.22
	0.13
	2.11
	1.60
	6.06
	0.07
	0.40
	2.91
	5.19
	0.11
	2.15
	0.20
	6.26
	1.89
	3.34
	0.84
	6.12
	0.10
	0.26
	2.36
	3.23

[illegible]



TABLE 3.—Maximum and minimum temperatures for December, 1910. District No. 8, Texas and Rio Grande Valley.

Date.	Colorado.						New Mexico.												Texas.									
	Garnett.		San Luis.		Agricultural College.		Carlsbad.		Fort Stanton.		Mountainair.		Roswell.		Roswell.		Santa Fe.		Santa Rosa.		Abilene.		Big Springs.		Brownsville.		Corpus Christi.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	48	9	49	18	60	25	51	20	60	13	57	19	52	29	49	19	52	25	53	17	52	28	57	23	68	50	61	45
2....	50	11	52	16	67	28	62	24	58	28	57	26	60	31	62	21	55	28	71	19	60	36	64	30	68	43	63	51
3....	51	10	55	14	72	48	76	31	66	32	62	34	61	38	75	31	54	33	69	21	66	42	74	39	77	53	76	57
4....	51	18	47	27	77	38	82	36	65	31	58	41	57	46	75	34	51	30	64	41	78	37	79	33	78	64	81	63
5....	39	12	40	12	60	22	74	39	63	30	51	25	49	33	58	26	41	21	56	30	36	35	56	33	75	58	60	55
6....	37	-1	34	2	61	25	57	20	50	10	49	17	46	21	54	17	40	20	58	17	47	25	56	20	62	44	59	44
7....	45	1	48	11	63	27	73	21	51	24	48	25	58	29	70	28	50	22	64	18	63	40	68	34	73	38	65	50
8....	47	4	49	7	69	27	72	32	58	34	58	25	57	32	66	34	49	28	62	24	62	30	55	29	78	52	78	59
9....	55	12	57	17	71	27	80	26	61	26	62	31	61	33	77	25	55	30	68	24	67	27	66	24	79	62	80	58
10....	52	11	55	17	75	30	74	40	66	27	64	30	61	30	65	34	56	28	62	31	54	38	66	35	80	63	81	62
11....	55	15	50	17	74	38	69	32	69	21	61	32	64	37	59	27	52	30	68	24	67	33	70	26	80	64	78	65
12....	50	15	52	19	68	38	64	37	67	19	60	31	54	31	46	30	50	27	48	24	48	38	53	39	81	64	76	65
13....	44	17	47	16	67	45	48	37	58	25	44	24	43	24	43	28	37	18	41	25	38	34	40	32	78	59	68	49
14....	50	9	39	20	59	43	42	36	41	30	33	28	40	24	42	37	39	26	50	33	40	35	39	32	68	50	49	46
15....	48	7	45	10	62	35	45	36	41	30	44	22	35	24	51	35	46	22	60	29	54	40	53	37	60	48	54	47
16....	49	0	45	5	57	28	59	40	41	22	48	20	48	22	59	25	46	17	63	18	59	37	60	41	58	53	56	53
17....	47	0	44	0	55	31	57	26	54	19	51	21	46	22	58	22	45	16	54	18	64	43	67	37	60	55	60	54
18....	45	-2	48	2	62	33	60	29	59	16	52	19	51	24	53	21	46	17	50	17	57	39	61	31	72	49	60	52
19....	45	-2	51	1	59	43	63	26	56	22	50	22	50	26	62	20	46	20	54	19	57	34	59	26	77	48	70	53
20....	42	4	40	10	60	35	59	32	58	28	47	29	42	34	55	32	46	16	48	28	56	40	56	33	73	52	66	52
21....	36	2	35	11	55	27	61	26	46	28	39	21	39	24	60	30	30	18	46	25	64	42	66	49	74	51	67	60
22....	35	6	38	11	51	27	59	32	48	28	38	22	37	25	47	26	32	14	46	29	54	42	59	36	77	70	74	60
23....	38	0	43	5	56	25	55	29	38	18	44	12	48	19	53	18	36	12	53	14	50	30	53	21	72	50	60	50
24....	40	9	42	9	59	30	62	21	46	24	48	22	51	26	60	20	42	18	61	14	62	35	66	31	67	57	60	48
25....	41	10	41	20	67	34	59	42	55	29	50	26	52	31	59	25	40	22	47	31	67	39	70	31	74	52	71	55
26....	43	12	40	26	63	29	58	26	60	20	52	27	59	31	48	28	42	30	50	21	52	36	70	31	78	53	77	61
27....	39	11	36	16	55	40	64	32	55	28	44	24	44	24	57	30	37	18	49	23	69	41	64	38	77	61	76	66
28....	32	0	31	8	55	31	62	36	44	17	41	15	38	18	55	30	30	15	50	24	57	46	59	38	77	67	75	65
29....	29	0	30	1	48	30	54	28	47	14	36	11	34	17	44	24	27	7	40	16	46	30	51	32	74	62	70	51
30....	33	-6	37	-2	43	17	53	11	39	8	39	12	37	13	50	19	33	8	46	18	47	26	32	16	62	48	51	44
31....	35	-4	35	12	60	19	67	24	50	11	43	20	40	16	64	18	33	11	51	16	54	34	60	30	58	43	62	44
Mns..	43.6	6.1	43.7	11.5	61.3	31.5	61.7	29.6	53.9	22.4	49.4	23.6	48.5	27.1	57.3	26.3	43.2	20.9	54.6	22.8	56.7	35.9	60.4	31.8	72.4	53.6	67.8	54.3

Date.	Texas.																											
	Del Rio.		El Paso.		Fort McIntosh.		Fort Stockton.		Fort Worth.		Galveston.		Hallettsville.		Houston.		Lufkin.		Palestine.		Plainview.		San Antonio.		Seymour.		Taylor.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	58	30	57	32	68	43	63	33	52	32	54	44	60	35	56	38	52	32	49	34	50	22	59	38	46	27	52	34
2....	63	36	62	31	70	47	68	28	56	28	58	42	60	32	59	35	55	23	55	30	58	20	59	40	62	27	58	33
3....	70	40	68	40	83	46	80	40	70	43	67	58	69	50	71	45	66	35	68	43	66	37	73	48	63	39	72	42
4....	84	40	72	53	87	48	84	49	77	40	71	65	80	59	79	57	89	57	76	57	73	34	80	48	72	37	78	49
5....	69	48	59	37	79	48	74	44	49	35	68	44	67	52	68	42	75	44	65	36	67	27	66	50	55	34	63	39
6....	60	30	57	28	68	34	63	24	47	26	48	37	53	37	49	34	47	39	43	28	53	15	60	38	49	30	49	30
7....	63	32	60	28	66	35	72	31	55	33	62	42	64	27	58	33	52	23	52	30	65	29	64	33	79	36	61	34
8....	78	34	67	34	80	34	68	36	61	40	68	62	77	45	71	53	69	42	66	39	59	20	74	44	52	40	69	41
9....	72	30	69	35	84	35	80	30	58	33	70	63	73	52	75	56	65	50	62	50	76	20	74	46	71	23	64	40
10....	86	36	69	35	88	48	72	37	60	47	73	64	80	60	81	62	78	52	74	52	64	30	80	50	63	33	78	46
11....	75	38	71	34	86	58	74	29	63	42	72	65	80	65	78	61	78	57	70	56	62	23	76	54	60	31	75	47
12....	76	51	62	41	84	65	69	39	50	37	70	58	79	62	78	57	69	52	56	43	42	30	75	59	54	42	76	50
13....	64	44	49	40	80	61	49	35	38	34	58	45	62	46	57	42	60	36	43	36	38	30	59	41	43	35	50	38
14....	48	41	47	37	65	46	41	32	42	33	57	46	46	41	53	42	44	34	41	33	44	29	45	39	41	34	41	37
15....	57	46	48	36	54	47	47	37	59	40	61	54	54	46	54	50	53	34	57	41	49	29	54	43	52	40	51	41
16....	57	48	53	39	60	53	54	43	60	38	60	54	56															



**Climatological Data for December, 1910.**  
**DISTRICT No. 9, COLORADO VALLEY.**

FREDERICK H. BRANDENBURG, District Editor.

**GENERAL SUMMARY.**

The unusually mild weather that characterized the fall months continued without a break during the first and second decades, with two brief periods of precipitation that were confined to the northern half of the district. With the approach of the third decade a change to unsettled weather was general; temperatures were lower than the normal most of the time, precipitation became more frequent and widespread, but unfortunately insufficient in amount to bring the totals for the month up to the average, except in a few localities. Although a fair volume was reported in the upper Salt and upper Gila Rivers, water for irrigation was scarcely adequate to the needs, while in southwestern New Mexico the supply was decidedly short in all districts.

**TEMPERATURE.**

The mean of the 124 stations reporting was 37.6°, or 2.8° warmer than the normal and 10.8° warmer than December, 1909. By subdivisions, the means and departures were: Western Wyoming, 19.5°, +3.2°; western Colorado, 24.7°, +4.1°; eastern Utah, 31.1°, +3.6°; western New Mexico, 37.0°, +2.3°; Arizona, 47.6°, +2.2°; and southeastern Nevada, 41.2°. The highest monthly mean was 62.0° at Mohawk Summit, Ariz., and the lowest, 7.4°, at Dillon, Colo. During the first decade temperatures were continuously above the normal, except one day in the upper San Juan Valley. In the central part of the district the excess was marked. Mean temperatures above the normal persisted throughout the second decade, except near the Gulf of California. The last decade averaged colder than the normal throughout the district, although there were several warm days in the central portion. It was during this decade that the minimum temperatures of the month were generally recorded, and heavy to killing frosts occurred in the central and southern portions of Arizona. The highest temperatures of the month were generally within a few degrees of the highest of record for December, while the lowest were not near so low as are commonly noted in December. By subdivisions the extremes were: Western Wyoming, 45° and -11°; western Colorado, 60° and -27°; eastern Utah, 65° and -5°; western New Mexico, 76° and -28°; Arizona, 83° and -6°; and Nevada, 91° and 12°.

**PRECIPITATION.**

The average precipitation for 172 stations reporting was 0.75 inch, or 0.37 inch below the normal, and 0.73 inch less than for the corresponding month last year. A deficiency was noted on all drainage areas except the Grand. By watersheds, the means and departures were: Green, 0.98, -0.02; Grand, 1.49, +0.28; San Juan, 1.29, -0.37; Little Colorado, 0.53, -0.34; Gila, 0.27, -0.69; Mimbres, 0.10, -0.54; and Colorado proper, 0.66, -0.09 inch. The greatest monthly amount was 3.92 inches, at Corona, Colo., and none occurred at 1 station in Colorado, 6 stations in New Mexico, and 12 stations in Arizona, principally on the Gila watershed. The average number of days with 0.01 inch or more of precipitation was 4.

**MISCELLANEOUS.**

The percentage of sunshine was below the normal in western Colorado and central Arizona, while a marked excess was noted in the southwestern part of Arizona. Grand Junction reported 43, Durango 65, Flagstaff 80, Phoenix 75, and Yuma 89 per cent of the possible.

The mean relative humidity was 12 per cent above the normal at Phoenix, while somewhat less than the normal was noted elsewhere. The values reported were: Grand

Junction 75, Durango 69, Flagstaff 64, Phoenix 62, and Yuma 44 per cent.

Extracts from section snowfall bulletins:

*Western Wyoming.*—At the close of December there was less than the usual amount of snow in the region drained by the Green, and the present outlook for water the coming season is not encouraging.

*Western Colorado.*—The season's snowfall up to December 31 was much less than for the corresponding period last year, and, as a whole, considerably less than the normal. In a few localities on the different watersheds approximately the average amount was noted, but the areas so favored are too small to make up for the general and marked deficiency in the water stored for late irrigation. The snow is generally unpacked and there has been little drifting.

*Eastern Utah.*—The snowfall up to December 31 was below the average and much below the amounts reported a year ago. The outlook for water is poor.

*Western New Mexico.*—The snowfall during October, November, and December was much lighter than the normal and considerably less than for the corresponding period last year. The snow is not compact and is evenly distributed.

*Arizona.*—The snowfall of December was much below the normal. As compared with the close of December, 1909, the deficiencies in depth were: Salt and Verde watersheds, 13.5 inches; Gila watershed, 4.9 inches; Agua Fria and Hassayampa watersheds, 8.5 inches; and Little Colorado watershed, 38.9 inches.

**NEW SITE FOR THE COLORADO RIVER DAM.**

By L. N. JESUNOVSKY, Section Director.

Orders have been given by Mr. R. M. Teague, president of the Chuckawalla Development Company, for the inauguration of drilling operations on the Colorado River, at a point known as Box Canyon, near Bill Williams Fork, about 16 miles north of Parker, Ariz. A steam barge is now under course of construction and upon its completion the drilling apparatus lately received will be towed up the stream, and the little steamer will be put in commission for the transportation of material and supplies to the base of operations.

The drilling operations which have been in progress about 5 miles above Parker for the past few months are still being continued, but it is stated that this site will be abandoned, owing to the great depth to bedrock, which makes that point impracticable for the construction of a power dam. The company will endeavor to find a more suitable site up the river.

In connection with the abandonment of the old site, it is stated that a 10-foot diversion dam is planned by the Chuckawalla Company at Headgate Rock, the power dam to be built farther up the stream. If this report is correct, it goes to prove that the Chuckawalla Company plans to provide an irrigation system for the reservation. Heretofore the officials of the company disclaimed any intention to provide an irrigation project for these lands, basing their arguments and petitions to Congress on the privilege of building a dam on the Colorado solely for the purpose of conveying water into the Chuckawalla Valley, over 40 miles west of Parker. This latter project, it is now claimed, has been abandoned by the company, owing to its utter impracticability. What arguments will be advanced before the Congressional Committee on Rivers and Harbors for the construction of a dam near Bill Williams Fork are not known, but, from all appearances, it looks as if it will have to be admitted that it is solely for power purposes.

The Chuckawalla Company is contemplating the construction of a diversion dam in the event of the passage of the Warren bill, now before Congress. The cost of such a dam would not be so great as the one originally contemplated, and in the absence of any holdup in the way of water rights there is no doubt but what the citizens of Parker would approve this means of opening up the Parker Indian Reservation, with certain amendments to the Warren bill.



TABLE 1.—Climatological data for December, 1910. District No. 2, Colorado Valley.

Stations.	Counties.	Elevation, feet.	Length of record years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.				Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, of inch or more.	Number of clear days.	Number of partly cloudy days.	Number of overcast cloudy days.			
Wyoming.																					
Battle Mountain.	Carbon.	7,300																		Forest Ranger.	
Daniel.	Uinta.	6,740	11	19.0	+ 2.8	45	6	-10	6	55	0.50	- 0.32	0.30	5.0	2	16	13	2	nw.	J. M. Van Dervort.	
Eden.	Sweetwater.	6,577	3	16.4		40	24	-11	23	48									w.	Eden Val. L. & Ir. Co.	
Green River.	do.	6,083	5	23.0	+ 3.5	51	1	-2	16	37	0.13	- 0.26	0.05	2.0	3	21	4	6	w.	Geo. W. Maxon.	
Pinedale.	Fremont.	7,167	4																	Forest Supervisor.	
Rambler.	Carbon.	9,232																		J. C. Fothergill.	
Willow Creek Cabin.	Fremont.	7,500	2																	John L. Allen.	
Colorado.																					
Anheerof.	Pitkin.	9,483	8	21.0		43	1	-11	29	40	1.27		0.57	20.5	6					Dan McArthur.	
Bed Rock.	Montrose.										0.37		0.21	6.8	3	15	8	5		W. B. Weybright.	
Breckenridge.	Summit.	9,516	30	16.7	- 0.3	44	2	-15	30	40	1.05	- 1.21	0.50	17.6	5	7	13	11	nw.	Mrs. J. G. Thompson.	
Buford.	Rio Blanco.										1.66		0.55	33.6	6	17	3	11	w.	Mrs. H. Genier.	
Cascade.	San Juan.	8,900	4	28.5		60	12	-10	29	55	2.44		0.66	26.4	9	16	5	10		San Juan P. & W. Co.	
Cedar-idge.	Delta.			29.2		52	10	-5	22	33	0.70		0.52	8.0	2	17	6	8		Harry A. Cobbett.	
Chromo.	Archuleta.	7,500	4	26.4		38	20	-26	29	66	0.37		0.15	14.5	4				sw.	Lawrence Nolan.	
Cochetop.	Saguache.	9,088	1								0.41		0.18	5.6	4	11	15	5	ne.	Bessie McDonough.	
Colbran.	Mesa.	6,000	17	29.3	+ 3.4	52	1	5	23	29	1.38	+ 0.21	0.49	22.0	9	12	10	9	sw.	A. A. Wood.	
Columbine.	Routt.	8,766	1								2.80		0.45	36.2	12	10	13	8	sw.	Mrs. M. A. Caron.	
Columbine Ranch.	Delta.	6,925	1								1.96		0.46	13.1	8	16	4	11	s.	Geo. W. Wade.	
Corona.	Grand.	11,060	4	13.3		36	17	- 8	30	24	3.92		0.60	49.5	14				w.	U. S. Weather Bureau.	
Craig.	Routt.																			C. S. Merrill.	
Crawford (near).	Montrose.	6,600	1	29.4		53	11	0	29	33	1.50		0.57	14.5	10	14	8	9		C. W. Roe.	
Crested Butte.	Gunnison.	8,867	3	15.2		45	2	-17	30	48	3.04		0.77	25.0	7	15	11	5		Charles L. Ross.	
De Beque.	Mesa.	4,935	1																	C. M. Paine.	
Delta.	Delta.	4,965	19	27.5	+ 2.2	58	2	- 8	29	38	1.60	+ 0.96	0.40	13.8	10	11	7	13		E. M. Getts.	
Dillon.	Summit.	8,800	1	7.4		30	23	-24	29	53	0.75		0.33	13.5	4	15	8	8	n.	Harry T. Hamilton.	
Dolores.	Montezuma.	6,500	1	31.7		56	2	-2	29	37	1.30		0.40	11.0	6	7	10	13	w.	Wm. C. Syrett.	
Durango.	La Plata.	6,534	17	31.0	+ 2.7	58	9	4	29	34	0.94	- 0.90	0.33	10.7	7	12	13	6	nw.	U. S. Weather Bureau.	
Eagle.	Eagle.	6,598	5								2.01		0.44	22.0	12	14	0	17		J. M. Witterman.	
Eureka.	San Juan.	10,000	3								1.67		0.50	19.0	8	9	8	14	n.	San Juan P. & W. Co.	
Fraser H.	Grand.	8,500	2	18.4		45	1	-27	26	54	1.67		0.26	6.2	8	14	6	11	n.	L. D. C. Gaskill.	
Fruta.	Mesa.	4,510	11	29.0	+ 4.7	50	15	-5	23	40	0.87	+ 0.13	0.26	6.2	8	14	6	11	n.	J. B. Willis.	
Gladstone.	San Juan.	10,400	3								3.48		0.57	43.4	11	4	15	12	ne.	San Juan P. & W. Co.	
Glenwood Spgs (near).	Garfield.	5,622	12	28.4	+ 3.2	56	1	-1	22	47	1.10	- 0.34	0.40	7.0	5	17	5	9	w.	E. A. O'Neill.	
Grand Junction.	Mesa.	4,608	19	30.0	+ 1.8	50	1	-2	29	27	1.11	+ 0.67	0.42	8.6	8	11	6	14	nw.	U. S. Weather Bureau.	
Grandlake.	Grand.	8,153	2								2.63		0.75	25.4	6	16	6	9	w.	Mrs. Belle Kauffman.	
Grand Valley.	Garfield.	5,089	18	31.2	+ 6.5	54	1	0	23	39	0.65	- 0.25	0.20	5.0	7	8	10	13	sw.	David Evans.	
Gunnison.	Gunnison.	7,670	17	11.8	- 0.4	46	1	-3	29	39	1.39	+ 0.77	0.50	17.5	8	22	6	3	sw.	Clarence Adams.	
Horseshoe.	Montrose.	8,700	1								1.94		0.48	35.4	7	15	9	7	sw.	Lawrence J. Finch.	
Ironton.	Ouray.	10,000	1								2.44		0.41	34.4	12	8	15	8	ne.	P. H. Foley.	
Ladore.	Routt.										0		0.00	0.0	0	16	4	11	s.	E. Bassett.	
Lake City.	Hinsdale.	8,686	5	22.0		53	10	-14	29	41	1.05		0.44	9.9	11	14	12	5	s.	J. F. Maurer.	
Lay.	Routt.	6,190	16	24.0	+ 5.1	57	8	-21	26	53	0.77	- 0.16	0.35	7.0	5	11	7	13		A. G. Wallihan.	
Lead.	Grand.	8,750	1																	L. J. Wade.	
Mancos.	Montezuma.	6,960	11	31.0	+ 4.4	60	3	-7	29	44	1.79	- 0.57	0.60	15.0	6	19	8	4	nw.	B. M. Krumpalitsky.	
Marble.	Gunnison.	7,951	1	25.9		51	1	-5	29	40	0.92		0.33	14.5	11	13	3	15	ne.	Homer Harrington.	
Marshall Pass.	Saguache.	10,846	7								1.05		0.21	25.0	5				w.	Wm. D. Lillard.	
Meeker.	Rio Blanco.	6,182	18	26.7	+ 7.1	54	1	-10	22	40	1.24	+ 0.04	0.53	10.0	6	13	9	9		T. Baker.	
Montrose.	Montrose.	5,811	21	27.2		52	10	-4	29	33	0.96	+ 0.17	0.40	13.5	11				w.	U. S. Reclamation Service.	
Nast.	Pitkin.	7,953	1			48	20				1.08		0.36	16.4	4	13	7	11	w.	Arthur Hanthorn.	
Pagoda.	Routt.	6,500	19																	Shaw Bros.	
Pagosa Springs.	Archuleta.	7,108	3	24.6		53	2	-23	29	49	1.40		0.38	16.5	8	14	9	8		E. T. Walker.	
Paoia.	Delta.	5,094	15	30.8		55	1	-1	23	33	2.20	+ 1.10	0.52	17.5	8	11	12	8	sw.	J. M. Underwood.	
Parshall.	Grand.		1																	F. A. Field.	
Pitkin.	Gunnison.	9,500	1								1.52		0.55	23.0	8	7	10	14	s.	Mrs. Maggie Cammann.	
Pyramid.	Rio Blanco.			25.2		50	2	-8	26	35	1.90		0.50	17.3	8	9	5	17	w.	C. E. Ery.	
Rangely.	do.	5,080	11	26.4	+10.4	53	1	-7	29	39	0.76	0.00	0.27	6.4	5	11	7	13	w.	Mrs. C. P. Hill.	
Redcliffe.	Eagle.	8,695	15								1.30		0.28	19.4	7	12	5	14		Dorothy Greiner.	
Rico.	Dolores.	8,524	8								1.53		0.28	18.0	9	22	0	9	s.	Clinton B. Smith.	
Rifle.	Garfield.	5,437		29.1		56	1	1	22	39	0.32		0.20	1.0	4					Horace Mann.	
River Portal.	Montrose.	6,570	4																	U. S. Reclamation Service.	
Sapinero (near).	Gunnison.	8,125	8	20.0		46	9	-10	30	33	3.12		0.70	33.7	13	14	7	10	w.	W. F. Irving.	
Shoshone.	Garfield.	6,110	1	29.5		48	1	8	30	27	1.28		0.55	10.5	7	14	3	14		Central Colo. Power Co.	
Silverton.	San Juan.	9,285	6								1.30								sw.	A. F. Root, Jr.	
Silverton (near).	do.	9,400	3	20.6		49	2	-11	29	44	1.30		0.30	16.6	9	4	14	13	sw.	San Juan P. & W. Co.	
Spruce Lodge.	Grand.	9,600	2								3.46		0.90	49.0	15					H. J. Wills.	
Steamboat Springs.	Routt.	6,683	7	21.9		55	1	-25	36	52	2.28		0.60	14.4	8	18	3	10		M. Elliott Houston.	
Tacoma.	La Plata.	7,300	3																	San Juan P. & W. Co.	
Terminal Dam.	do.	8,300	3								1.44		0.38	17.5	8	18	6	7	s.	Do.	
Terrill's Ranch.	Mesa.	7,000	1								0.68		0.19	T.	8	14	4	13	w.	A. F. Terrill.	
Uncompahgre Plateau.	Montrose.	8,400	1																	Martin Esser.	
Yampa (near).	Routt.	8,000	1								0.57		0.16	8.4	8	12	8	11	s.	Percy A. Hughes.	
Utah.																					
Aneth.	San Juan.	4,800	8	34.5		60	1	15	23	38	0.45		0.18	3.0	4	20	8	3	se.	Howard R. Antes.	
Castle Dale.	Emery.	8,500	11	25.2	+ 0.5	82	2	-8	22	40	1.15	+ 0.75	0.60			4	15	16	0	James	



TABLE 1.—Climatological data for December, 1910. District No. 9—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.					Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of overcast days.		Prevailing wind direction.
New Mexico.																				
Alma.	Socorro.	5,500	14	40.9	+ 2.9	72	3	14	30	52	0.35	0.60	0.35	0.0	1	17	14	6	s.	M. A. Balke.
Aragon.	do.	5,856	3	33.2		66	9	2	31	53	0.30		0.30		1	15	12	4	sw.	John R. Milligan.
Aztec.	San Juan.	5,590				68	1	0	28	45	0.04		0.30	12.0	6	16	10	5		Dr. F. J. West.
Blackrock.	McKinley.	5,500	2	37.1		68	1	0	28	45	0.08		0.08	1.0	1					R. J. Bauman.
Bloomfield.	San Juan.	5,500	15	31.7	+ 3.9	61	9	2	29	41	0.85	+ 0.22	0.20	7.2	7	15	12	4	sw.	Fred LeClere.
Cambray.	Luna.	4,215	11			70	10				0.00	- 0.51	0.00	0.0	0	13	10	8	w.	Agent S. Pacific R. R.
Columbus.	do.	4,054	1			73	3	14	30		T.		T.	0.0	0	11	13	7	ne.	Agent E. P. & S.W. R. R.
Deming.	do.	4,333	23	42.8		76	3	13	23	55	0.00	- 0.63	0.00	0.0	0	15	15	1	w.	Agent S. Pacific R. R.
Dulce.	Rio Arriba.	6,756	3	24.6	+ 0.6	53	10	-28	29	50	1.03	- 0.43	0.42	12.5	8	15	11	5	w.	G. H. Blakeslee.
Fort Bayard.	Grant.	6,152	35	42.0	+ 2.6	72	9	15	30	36	0.30	- 0.55	0.25	0.8	2	26	5	0	nw.	U. S. General Hospital.
Fort Wingate.	McKinley.	6,997	46	36.6	+ 3.9	64	9	5	29	49	0.65	- 0.32	0.24	8.5	4	21	1	9	sw.	Medical Corps, U. S. Army.
Fruitland.	San Juan.	4,800	17	32.4	+ 2.8	61	11	4	29	38	0.32	- 0.08	0.16	4.0	3	21	9	1	nw.	Cyril J. Collyer.
Gage.	Luna.	4,486	3	43.4		71	11	13	23	47	0.00	- 0.45	0.00	0.0	0	23	3	5	w.	Agent S. Pacific R. R.
Gila (near).	Grant.	4,470	11																	T. J. Clark, sr.
Gila Planting Station.	do.	6,475		41.2		70	10	15	30	35	0.21		0.16	0.8	2	25	3	3	w.	U. S. Forest Service.
Hachita.	do.	4,504	1								0.14		0.14	0.0	1	17	11	3	nw.	Agent E. P. & S.W. R. R.
Haynes.	Rio Arriba.	6,600	1								0.50		0.30	5.0	2	28	1	2	nw.	Dr. John R. Haynes.
Hermansburg.	Luna.	4,451	1								0.00		0.00	0.0	0	27	4	0	w.	Agent E. P. & S.W. R. R.
Lordsburg.	Grant.	4,245	10	43.2	- 0.3	75	12	16	31	40	0.02	- 0.57	0.02	0.0	1	26	2	3	sw.	Agent S. Pacific R. R.
Luna.	Socorro.	7,300	5	31.8		64	3	3	30	50	T.		T.	T.	0	10	21	0	s.	C. B. Martin.
Mimbres.	Grant.	5,007	5								0.06		0.06	0.0	1	25	5	1	nw.	Chas. Dennis.
Pratt.	do.	4,415	1								0.00		0.00	0.0	0	21	10	0	sw.	Agent E. P. & S.W. R. R.
Putnam.	San Juan.	6,200	1																	D. Lee Thompson.
Redrock.	Grant.	4,150	5								0.17		0.10	0.0	2	21	10	0		Robt. H. Woods.
Rodeo.	do.	4,118	1								0.00		0.00	0.0	0	29	2	0		Agent E. P. & S.W. R. R.
Arizona.																				
Allalres Ranch.	Cochise.	4,184	14		+ 1.5	77	9	30	31	36	0.01	- 0.72	0.01	0.0	1	26	1	4	s.	Thos. Allaire.
Arizona Canal Dam.	Maricopa.	1,372	18		+ 1.5	77	9	30	31	36	0.52	- 0.44	0.44	0.0	3	13	13	5	ne.	U. S. Reclamation Service.
Aztec.	Yuma.	492	12	55.8	- 0.9	80	4	32	26	40	0.06	- 0.54	0.06	0.0	1	26	3	2	s.	Agent S. Pacific Co.
Benson.	Cochise.	3,523	28	49.0	- 0.4	83	11	20	28	50	0.10	- 0.42	0.10	0.0	1	26	3	2	e.	Do.
Bisbee.	do.	5,500	30	48.3	- 1.8	73	10	26	30	30	0.13	- 0.92	0.13	0.0	1	21	8	2	e.	Rev. J. G. Pritchard.
Bonita.	Graham.	4,916																		A. Johnson & Co.
Bowie.	Cochise.	3,756	35	48.4	+ 1.6	76	1	23	20	41	0.05	- 1.06	0.05	0.0	1	13	15	3	sw.	Agent S. Pacific Co.
Buckeye.	Maricopa.	980	19	53.2	+ 2.0	81	11	22	31	45	0.19	- 0.69	0.19	0.0	1	18	11	2	e.	H. E. Kell.
Camp Verde.	Yavapai.	3,160									0.05		0.05	0.0	1	10	16	5	sw.	T. P. Gabbard.
Canille.	Santa Cruz.	5,225	1								0.28	- 0.46	0.14	0.0	3	17	13	1	sw.	R. A. Rodgers.
Casa Grande.	Pinal.	1,896	31	55.1	+ 1.5	79	3	30	29	37	0.28	- 0.46	0.14	0.0	3	17	13	1	sw.	Agent S. Pacific Co.
Cave Creek.	Maricopa.	1,520	4	52.6		78	3	28	31	43	0.55	0.43	0.0	2	20	8	3		E. A. Howard.	
Chin Lee.	Apache.	6,000	3	32.2		65	10	5	23	42	0.46	0.22	4.2	5	20	5	6	n.	F. L. Ostermann, O. F. M.	
Chilman's Mill.	Graham.	8,000	3	36.6		64	3	13	28	42	0.63	0.35	6.5	2	15	10	6		H. R. Chlanson.	
Clifton.	do.	3,584	19	46.6		67	4	29	20	27	0.33	- 0.72	0.21	0.0	2	28	3	0		P. Reisinger.
Cline.	Gila.	2,300	11	49.4	+ 3.0	78	16	23	28	46	0.53	- 1.15	0.46	0.0	2	16	11	4	sw.	W. M. Clanton.
Cochise.	Cochise.	4,219	12	44.9	+ 0.1	75	9	11	30	50	0.00	- 0.66	0.00	0.0	0	27	1	3		Agent S. Pacific Co.
Columbia.	Yavapai.	1,900																		M. J. Nolan.
Congress.	do.	3,688	14	53.8	+ 2.1	75	1	32	31	28	0.72	- 0.49	0.47	0.0	4	13	17	1	sw.	Assayer Congress Mine.
Courtland.	Cochise.	4,543	1								0.00	0.00	0.0	0	8	23	0	0	sw.	Agent E. P. & S.W. Co.
Dos Cabezas.	do.	5,250	2	43.0		73	3	17	28	41	0.00	0.00	0.0	0	27	3	1	w.	N. Erickson.	
Douglas.	do.	3,930	8	47.6		81	10	14	30	55	0.02	0.02	0.0	1	25	2	4	sw.	Dr. F. T. Wright.	
Dudleyville.	Pinal.	2,204	21	50.6	+ 3.1	75	9	30	31	43	0.41	- 0.91	0.34	0.0	2	13	13	5	sw.	G. F. Cook.
Fairbank.	Cochise.	3,862	1								0.00	0.00	0.0	0	22	5	4		Agent E. P. & S.W. Co.	
Flagstaff.	Cocconino.	6,907	20	33.2	+ 4.8	62	9	0	28	42	0.95	- 1.00	0.44	11.3	6	14	3	14	e.	U. S. Weather Bureau.
Florence.	Pinal.	1,504	12	54.4	+ 2.8	80	5	32	30	44	0.35	- 0.94	0.35	0.0	1	20	9	2	w.	Agent P. & E. R. R.
Fort Apache.	Navajo.	5,300	40	41.2	+ 6.3	72	9	16	17	47	0.72	- 0.76	0.36	0.8	3	22	5	4	w.	Post Surgeon U. S. Army.
Fort Huachuca.	Cochise.	5,100	25	46.0	0.0	75	8	21	29	50	T.	- 1.01	T.	0.0	0	24	2	5	nw.	Do.
Fort Mohave.	Mohave.	604																		A. F. Duclos.
Gilabend.	Maricopa.	737	20	54.6	+ 1.2	79	7	29	30	37	T.	- 0.65	T.	0.0	0	26	4	1	sw.	Agent S. Pacific Co.
Globe.	Gila.	3,525	9	47.1		71	11	28	31	35	0.26	0.22	0.0	2	19	9	3	se.	B. G. Fox, M. D.	
Grand Canyon.	Cocconino.	6,866	8	35.6		68	9	- 6	27	44	1.48	0.76	14.6	5	18	7	6	sw.	Agent G. C. R. R.	
Greer.	Apache.	9,200																		Mrs. M. Butler.
Hereford.	Cochise.	4,180	1								0.00	0.00	0.0	0	25	5	1	sw.	Agent E. P. & S.W. Co.	
Holbrook.	Navajo.	5,069	21	42.7	+ 7.8	73	9	14	30	46	0.21	- 0.49	0.16	2.0	2	25	2	4	sw.	T. Larson.
Intake.	Gila.	2,230	5								0.25	0.25	0.0	1	26	1	4	ne.	A. J. Robinson.	
Jerome.	Yavapai.	4,743	14	47.0	+ 3.6	62	11	13	23	34	0.97	- 0.46	0.45	0.0	4	19	8	4	w.	Dr. L. A. Hawkins.
Keams Canyon.	Navajo.	6,000	5	36.0		62	10	13	23	34	0.68	0.21	7.5	5	16	10	5	ne.	L. R. Ballard.	
Kingman.	Mohave.	3,326	9	47.4		74	1	22	30	42	0.42	0.40	0.0	2	5	23	3	ne.	G. R. Gooding.	
Lewis Springs.	Cochise.	4,029	1								0.00	0.00	0.0	0	10	15	6		Agent E. P. & S.W. Co.	
Maricopa.	Pinal.	1,186	35	52.9	+ 0.1	78	16	24	28	46	0.32	- 0.48	0.32	0.0	1	29	1	1	sw.	Agent S. Pacific Co.
Mesa.	Maricopa.	1,244	15	54.7	+ 3.6	76	2	26	31	38	0.53	- 0.42	0.38	0.0	2	17	14	0	ne.	C. L. Diehl.
Mohawk Summit.	Yuma.	538																		



TABLE 1.—Climatological data for December, 1910. District No. 9—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.							Precipitation, in inches.					Sky.				Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Prevailing wind direction.	
<i>Arizona—Continued.</i>																				
Tombstone.....	Cochise.....	4,550	12	49.5	+ 4.6	75	3	24	29	36	0.00	- 0.73	0.00	0.0	0	22	7	2	.....	F. N. Walcott.
Truxton.....	Mohave.....	4,197	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	S. M. Atkinson.
Tuba.....	Cocconino.....	4,500	12	35.7	+ 3.6	62	11	11	29	36	0.39	- 0.30	0.25	1.0	5	5	13	13	n.	G. H. Kraus.
Tucson.....	Pima.....	2,390	31	52.6	+ 0.9	83	3	23	29	45	0.06	- 0.85	0.06	0.0	1	5	24	2	nw.	University of Arizona.
Vail.....	do.....	3,421	12	53.7	+ 0.4	82	6	28	31	46	0.04	- 0.47	0.04	0.0	1	21	9	1	sw.	Agent S. Pacific Co.
Walnut Grove.....	Yavapai.....	3,649	17	.....	.....	.....	.....	.....	.....	.....	0.65	- 1.04	0.45	0.0	2	15	14	2	.....	J. O. Carter.
Wickenburg.....	Maricopa.....	2,072	13	50.2	+ 2.8	79	12	22	31	44	0.68	- 1.02	0.35	0.0	2	27	2	2	nw.	Agent S. F. & P. Ry.
Willcox.....	Cochise.....	4,164	30	45.2	+ 1.8	75	1†	15	31	52	0.25	- 0.43	0.25	0.0	1	11	13	1	sw.	Agent S. Pacific Co.
Williams.....	Cocconino.....	6,750	9	37.9	.....	65	9	10	27	43	1.00	.....	0.50	10.0	4	15	11	5	w.	E. J. Nordyke.
Winslow.....	Navajo.....	4,853	8	39.5	.....	70	11	12	29	44	0.20	.....	0.10	1.5	2	21	4	6	.....	J. F. Bauer.
Yarnell.....	Yavapai.....	4,700	13	.....	.....	.....	.....	.....	.....	.....	0.90	- 0.61	0.60	T.	2	21	7	3	s.	E. L. Bartholomew.
Yuma.....	Yuma.....	141	30	56.5	+ 0.8	80	3	30	31	36	0.00	- 0.45	0.03	0.0	0	29	1	1	n.	U. S. Weather Bureau.
<i>Nevada.</i>																				
Caliente.....	Lincoln.....	4,407	.....	35.9	.....	62	3	12	28†	36	0.40	.....	0.30	4.0	2	21	5	5	ne.	Agent Salt Lake Route.
Las Vegas.....	Clark.....	2,033	2	46.6	.....	91	9†	14	27†	59	1.00	.....	.....	0.0	2	.....	.....	.....	.....	Do.
Logan.....	do.....	1,700	3	47.2	.....	71	12	24	31	39	0.54	.....	0.47	0.0	3	10	7	14	n.	Ray M. Filcher.

a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.

† Also on other dates.

‡ Separate dates of falls not recorded.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

|| Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

¶ Estimated by observer.

||| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.



TABLE 2.—Daily precipitation for December, 1910. District No. 9, Colorado Valley.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Wyoming.																																		
Battle Mountain.	Snake.											.20																						0.50
Daniel.	Green.			.30																														0.13
Green River.	do.			.03						T.	.06	.05											T.											
Rambler.	Snake.																																	
Willow Creek Cabin.	Green.																																	
Colorado.																																		
Ashcroft.	Grand.				.40							.05	T.									T.	.57	.05	T.		.18	.02	T.	T.			1.27	
Bed Rock.	Dolores.																					.09		.07		.21							0.37	
Breckenridge.	Grand.			T.	.50	T.				T.	.09		.16	T.									T.	.14	T.		.16			T.	T.		1.05	
Buford.	White.			.27	T.	T.						.26	.09											.55	T.					.26		.23	1.61	
Cascade.	San Juan.				.06							.05											.25	.25		.20	.29	.47	.10			.17	2.41	
Cedaredge.	Gunnison.																						.52				.18						0.70	
Chromo.	San Juan.							.05														.13					.15	.04					0.37	
Cochetopa.	Gunnison.			T.	.16	T.								T.									.04				.18		.03				T.	0.41
Collbran.	Grand.				.05							.22	.09										.49	.12		.02		.01	.23		.08	.15	1.38	
Columbine.	Yampa.		.12	T.							.25	.42	.30	.16									.23	.45	.34	.18			.20		.08	.13	2.86	
Columbine Ranch.	Gunnison.				.33							.46	.26													.22	.12	.05				.12	1.96	
Craig.	Yampa.																																	
Corona II.	Grand.			.15	.16	.20					.08	.44	.40	.36	.12								.36	.60	T.	.26	.50	.09	.04	.20			3.92	
Crawford (near).	Gunnison.			.22								.23	.04										.16	.04			.57	.08	.04	.08		.04	1.30	
Crested Butte.	do.			.77	.38							.47											T.	.61			.58		.11	T.		T.	3.04	
De Beque.	Grand.																																	
Delta.	Gunnison.				T.							.28	.11	.01									.01		.40		.30	.07	.10	.20		.12	1.60	
Dillon.	Grand.				.14	T.					.23	.05	T.	T.	T.										.33	T.	T.	T.			T.	0.75		
Dolores.	Dolores.																						.40	.20			.20	.20	.20			.10	1.30	
Durango.	San Juan.			.02	T.																		.20	.13			.13	.15	.28			.05	0.94	
Eagle.	Grand.																																	
Eureka.	San Juan.		T.	.11	.44							.18	.08										.10		.08		.37	.18	.09	.10		.10	2.01	
Fraser II.	Grand.			.30	.20			.02				.10	.25										.50			.10	.20						1.67	
Fruita.	do.			T.	.03							.22	.02										.11	.26	T.				.04	.04		.15	0.87	
Gladstone.	San Juan.			.04	.57	T.						.19	.55										.29	.18	T.		.38	.30	.30	.31		T.	.37	3.48
Glenwood Sp'gs (near).	Grand.			.20								.18	.24											.40	.09								1.10	
Grand Junction.	do.			T.								.20	.05										.24	.23				.01	.19	.01		.18	1.11	
Grandlake.	do.			.50	.50						T.	.75	.35	T.										.35	.18	T.				T.	.01	.06	2.63	
Grand Valley.	do.			T.	.06							.16	.08											.20	.08							.06	0.65	
Gunnison.	Gunnison.			.10	.50							.18	.08											.10					.03			.06	1.39	
Horseshoe.	do.			.41																			.27	.21			.48	.30		.12		.15	1.94	
Ironton.	do.			.03	.41								T.	.11										.22	.25	.26		.33	.19	.33	.11	.07		2.44
Ladore.	Green.																																	
Lake City.	Gunnison.			.02	.44							.04											.06	.10	.02		T.	.20	.06	.07	.02	.02	.02	1.05
Lay.	Yampa.											.35												.30			.05					.05	0.77	
Leal.	Grand.																																	
Manitou.	San Juan.			.05								.02	.24										.60	.30			T.	.60	.12			.12	1.79	
Marble.	Grand.			.02	.04							.18												.18	.03			.33	.02	.01	.01		.02	0.92
Marshall Pass.	Gunnison.			.21							.21												.21	.21		.21							1.06	
Meeker.	White.			T.	T.							.24	.16											.29					*	.02		.53	1.24	
Montrose.	Gunnison.			T.								.02	.09	.01	.01								.11	.05			.40	.11	.01	.14		.01	0.99	
Nast.	Grand.			T.	.32	T.						.12	T.										.36	T.	T.	T.	.28	T.					1.08	
Pagoda.	Yampa.																																	
Pagosa Springs.	San Juan.			.14								T.	T.		.13								.18	.25			.12	.38	.23	.06		T.	1.49	
Paonia.	Gunnison.			T.	.29							.52	.12											.49			.25	T.	.18	.20		.15	2.20	
Parshall.	Grand.			.08																				.65								.05	0.75	
Pitkin.	Gunnison.				.55							.18	.20	.02														.30	.05	.02			1.52	
Pyramid.	Yampa.			.30								.05	.10	.50										.30	.30		T.			.10		.25	1.90	
Rangely.	White.			T.	T.							.15	.18											.01	.27							.15	0.76	
Redcliffe.	Grand.			.07	.18	.28	T.					.20	T.														.20	.18		.19	T.	T.	T.	1.30
Rico.	Dolores.											.21	.19															.17	.20	.10	.20	.03		1.53
Rifle.	Grand.				.05							.20												.28	.15							.03	0.32	
River Portal.	Gunnison.																							.04										
Sapinero (near).	do.			.05	.70							.23	.24											.06	.51	.28		.46	.14	.08	.18	.06	.13	3.12
Shoshone.	Grand.			.02	.30	T.						.22	.11											.55			.05		T.			.03	1.28	
Silverton.	San Juan.																																	



TABLE 2.—Daily precipitation for December, 1910. District No. 9—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
New Mexico—Contd.																																	
Dulce	San Juan			*	.11									.11							.14	.13	T.			.42	T.	.08	.04	T.		T.	1.03
Fort Bayard	Mimbres																				.25							.05					.30
Fort Wingate	Little Colorado																				.24	.14						.24				.03	.65
Fruitland	San Juan																				.04						.16	.12				T.	.32
Gage	Mimbres																																.00
Gila	Gila																																.21
Gila Planting Station	Mimbres																				.16	T.						.05					.14
Hachita	Gila																											.14					.30
Hagynos	San Juan																				.20												.00
Hermanes	Gila																																T.
Lordsburg	do																										.02						T.
Luna	do																																T.
Mimbres	Mimbres																				.06												.06
Pratt	Gila																																.00
Putnam	San Juan																																.00
Redrock	Gila											.07																					.17
Rodeo	do																										.10						.00
Arizona.																																	
Allaire Ranch	Sonora																										.01						.01
Arizona Canal Dam	Salt																				.44						.06		.02				.52
Astec	Gila																.06															.06	
Benson	San Pedro																		T.								.10					.10	
Bisbee	do																			T.								.13				.13	
Bonita	Mimbres																																.05
Bowles	Gila																											.05					.19
Buckeye	do																			.19								T.	T.				
Camp Verde	Verde																																.05
Canile	San Pedro																				.14	.06						.06					.28
Casa Grande	Gila																			T.	.43						.12					.55	
Cave Creek	Verde																				.22	.06				T.	.09	.05				.04	.46
Chino Lee	San Juan																				.35						.28					.63	
Chilsons Mill	Gila																				.21						.12					.53	
Clifton	do																				.46	.07										.53	
Cline	Salt																																.00
Cochise	Desert																																.72
Columbia	Agua Frio																				.47	.05					.11	.09	T.			.00	
Congress	Hasayampa																																.00
Courtland	White																																.00
Dos Cabezon	Desert																																.00
Douglas	Sonora																				.02												.02
Dudleville	Gila																			T.	.34						T.	T.	.07			.41	
Fairbank	San Pedro																																.00
Flagstaff	Little Colorado																				.10	.36					T.	.34	.12	.01		.02	.95
Flores	Gila																				.35											.35	
Fort Apache	Salt																				.18	.36	T.					.18				.72	
Fort Huachuca	San Pedro																																T.
Fort Mohave	Colorado																																
Gila Bend	Gila																				T.												T.
Globe	Salt																																
Grand Canyon	Colorado																				.15	.28		.22		.15	T.	.04	.14	T.		.26	
Greer	Little Colorado																																1.48
Hereford	Gila																																.00
Holbrook	Little Colorado																				.16	.05										.21	
Intake	Salt																				.25											.25	
Jerome	Verde																				.45	.04					.36	.22				.97	
Keenes Canyon	Little Colorado																					.21	.05			T.	.02	.20	T.		.30	.68	
Kingman	Colorado								.02												.40	T.										.42	
Lewis Springs	San Pedro																															.00	
Maricopa	Salt																				.32											.32	
Mesa	do																				.38							.15				.53	
Mohawk Summit	Gila																															.00	
Naco	San Pedro																											.02					.00
Natural Bridge	Verde																			T.	.50	.13					.10	.40				1.13	
Nogales	Santa Cruz																																
Oracle	San Pedro																																
Osborn	do																				.02							.15	.22				1.12
Paradise	Desert																																.02
Parker	Colorado																		T.													.00	
Payson	Verde																																T.
Phoenix	Salt																				.16	.09	T.					.17	T.			.67	
Pinal Ranch	Gila																				.27							.17				.30	
Pinto	Little Colorado																				.50							.04	.02			.44	
Prescott	Hasayampa																																.60
Quartzsite	Colorado																				.06											.05	
Redrock	Santa Cruz																																T.
Roosevelt	Salt																				.23	.06					T.	.05				.33	
Sacaton	Gila																				.12	.07					.06					.25	
St. Johns	Little Colorado																										.10						.31
St. Michaels	do																				.30	.38							.28	.09		T.	1.26
Salome	Colorado																				.15											.15	
San Carlos	Gila																					.											



TABLE 3.—Maximum and minimum temperatures at selected stations for December, 1910. District No. 9, Colorado Valley.

Date.	Wyoming.				Colorado.								Utah.								New Mexico.							
	Daniel.		Green River.		Durango.		Grand Junction.		Gunnison.		Meeker.		Steamboat Spgs.		Emery.		Fort Duchesne.		Hite.		Moab.		St. George.		Fort Bayard.		Fort Wingate.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	42	4	51	15	54	28	53	28	46	14	54	23	55	15	56	29	48	20	59	34	54	28	64	31	61	32	60	25
2.....	42	8	40	17	53	26	48	27	42	10	47	21	40	16	58	25	49	22	58	32	54	26	58	29	65	30	62	23
3.....	42	20	41	24	51	30	43	32	36	14	46	30	38	28	55	26	37	22	59	39	46	33	56	31	69	35	61	31
4.....	38	10	32	21	47	24	40	27	43	19	49	30	35	26	60	22	38	10	60	41	52	27	64	30	66	40	60	30
5.....	40	0	36	19	45	18	45	22	43	- 8	45	17	35	18	55	20	36	12	55	29	47	20	57	25	62	32	55	12
6.....	45	-10	42	8	40	19	40	25	10	-23	46	13	36	- 4	58	18	35	10	47	31	44	21	55	25	55	26	48	18
7.....	.....	.....	39	13	51	22	46	24	23	-15	46	19	40	9	46	26	34	12	53	28	44	22	54	23	61	38	59	31
8.....	.....	.....	41	9	50	22	45	22	25	-11	50	15	40	4	42	21	43	12	50	28	47	22	58	34	65	36	57	24
9.....	38	12	43	31	58	24	45	27	35	5	51	36	40	26	50	16	51	15	56	30	52	22	49	24	72	36	64	30
10.....	30	20	35	24	53	25	46	26	40	11	47	26	38	31	55	21	44	18	58	32	48	25	55	29	71	35	64	29
11.....	40	14	33	26	49	33	42	32	40	31	47	32	37	31	50	21	49	32	60	33	48	28	59	33	70	35	58	32
12.....	35	18	39	29	51	30	45	34	32	22	41	31	40	31	55	20	48	33	58	40	48	35	65	29	69	37	60	26
13.....	30	- 7	30	4	50	27	50	29	32	20	46	26	43	25	51	29	45	23	56	33	50	35	62	29	60	29	54	22
14.....	37	- 5	32	6	45	24	45	28	22	- 9	35	13	37	0	55	18	40	18	54	29	45	26	59	25	55	27	51	11
15.....	30	- 7	32	0	51	19	45	28	23	-10	31	18	40	0	55	19	38	20	54	27	46	22	59	24	56	25	49	18
16.....	35	- 7	33	- 2	46	18	46	23	26	-13	33	14	41	1	49	16	38	22	52	27	39	24	53	21	53	27	60	11
17.....	40	- 4	35	- 2	50	18	46	21	22	-16	31	11	40	0	44	18	35	20	52	27	39	25	60	21	53	23	55	16
18.....	35	- 9	34	6	50	18	47	20	21	-15	29	19	32	- 3	56	15	30	20	53	26	36	22	64	24	54	27	55	18
19.....	42	18	44	7	45	19	43	19	24	-11	37	9	43	0	47	13	32	22	52	25	36	22	54	21	59	30	55	18
20.....	35	- 2	38	5	35	22	43	19	26	-13	32	12	41	4	31	17	31	25	42	30	33	22	47	27	55	35	51	25
21.....	31	4	30	18	37	17	34	29	19	10	30	21	34	24	41	9	32	13	50	32	44	26	51	38	44	27	48	19
22.....	24	- 5	27	8	31	9	31	7	23	- 3	28	-10	28	8	34	5	30	- 2	44	27	42	13	50	28	44	28	46	9
23.....	32	10	37	13	33	7	25	0	21	-15	31	- 6	26	- 9	38	11	32	0	42	23	34	11	52	25	45	25	45	6
24.....	36	- 9	38	8	39	13	28	7	19	- 3	44	4	26	1	35	12	30	- 1	44	26	31	14	54	27	44	27	50	13
25.....	26	10	29	- 1	37	22	34	20	26	- 2	37	14	29	1	38	19	31	- 2	37	29	33	18	48	28	45	27	45	29
26.....	25	- 8	33	0	39	28	34	12	32	- 5	29	- 9	20	-25	44	9	38	0	37	27	33	20	53	29	44	30	43	28
27.....	24	2	29	8	40	19	32	25	26	2	34	9	30	- 8	41	7	34	- 1	40	21	35	22	48	25	45	24	46	26
28.....	28	10	28	9	33	9	27	9	24	6	25	- 3	29	8	46	6	30	- 2	41	20	36	16	51	25	44	22	48	12
29.....	30	10	32	10	30	4	22	- 2	12	-22	30	- 3	30	- 5	46	5	30	- 1	39	18	32	3	51	22	40	18	45	5
30.....	34	15	30	6	34	6	28	4	6	-23	36	3	35	-17	38	4	32	9	40	34	33	10	52	25	44	15	48	9
31.....	30	- 5	28	7	25	8	23	8	10	-22	37	17	25	8	32	3	24	- 3	38	23	33	9	46	26	35	18	44	20
Mns.....	34.3	3.7	34.8	11.2	43.6	19.6	39.7	20.4	26.0	-2.4	38.8	14.6	35.6	8.2	47.1	16.1	36.9	12.8	49.6	28.7	41.7	21.6	55.1	26.5	55.1	28.9	53.1	20.2

Date.	Arizona.																New Mexico.							
	Blaine.		Flagstaff.		Fort Apache.		Grand Canyon.		Parker.		Phoenix.		Prescott.		St. Michaels.		San Carlos.		Tucson.		Yuma.		Logan, Nev.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	66	40	59	25	70	23	52	27	75	31	77	47	.....	.....	62	23	66	43	79	42	78	54	67	35
2.....	66	41	62	20	70	23	56	24	76	35	74	42	.....	.....	64	20	63	28	80	36	77	50	65	32
3.....	72	43	60	30	69	27	54	27	78	35	74	46	.....	.....	62	23	66	30	83	39	80	49	65	38
4.....	69	46	53	23	68	29	47	10	77	25	72	45	.....	.....	57	37	73	32	74	39	76	43	70	37
5.....	65	37	46	21	66	23	62	29	75	30	74	42	.....	.....	51	16	68	33	73	33	76	51	65	34
6.....	60	34	56	22	68	21	54	32	74	36	74	39	.....	.....	46	16	68	24	76	38	76	46	65	37
7.....	67	39	58	21	66	25	64	30	72	38	72	40	.....	.....	57	20	65	26	76	34	75	45	63	29
8.....	69	40	62	22	67	25	66	36	75	37	74	39	.....	.....	60	20	69	27	77	36	78	46	63	29
9.....	70	41	62	24	72	26	68	24	73	37	72	41	.....	.....	63	22	68	26	79	35	78	46	56	35
10.....	73	33	59	25	72	26	62	23	70	42	72	43	.....	.....	61	22	63	26	81	36	75	47	50	36
11.....	70	48	53	25	68	25	36	30	76	38	74	46	.....	.....	53	22	69	27	76	38	78	49	68	34
12.....	65	41	47	17	64	26	54	22	77	38	71	41	.....	.....	53	18	71	28	72	35	73	48	71	36
13.....	58	41	46	30	63	22	54	28	79	39	74	42	.....	.....	52	18	66	27	75	34	74	45	68	45
14.....	57	35	46	24	60	23	50	17	78	41	73	49	.....	.....	51	18	65	40	73	44	74	43	70	41
15.....	53	35	44	27	60	16	48	21	77	38	72	42	.....	.....	51	13	65	27	69	35	76	49	66	29
16.....	52	37	52	15	60	17	35	23	70	31	70	42	.....	.....	56	12	66	28	68	42	74	44	63	24
17.....	57	33	48	17	65	18	60	24	72	37	72	44	.....	.....	55	15	65	27	71	36	73	37	61	27
18.....	59	40	46	18	65	22	53	23	74	36	74	46	.....	.....	55	14	69	26	71	35	69	44	62	40
19.....	59	40	47																					



**Climatological Data for December, 1910.**  
**DISTRICT No. 10, GREAT BASIN.**

ALFRED H. THIESSEN, District Editor.

**GENERAL CLIMATOLOGICAL CONDITIONS.**

The weather during December, 1910, was generally pleasant and unusually warm. During the middle of the month foggy weather was reported at many stations in the Utah and Nevada areas, and during the fore part of the month in the Oregon area. In the Utah area it was the warmest December but one in 20 years, while December, 1909, was the coldest. In Nevada the temperature averaged about 2.5° above normal and 10° higher than during December last year. The precipitation for the month was above normal somewhat, but averaged only about one-half as much as that of December, 1909.

**TEMPERATURE.**

The mean temperature for the district for December was 31.1°, which was about 3° above normal. The highest mean temperatures were recorded in the sheltered valleys of northern Utah and in the southern portions of the Nevada and the Utah areas. The greatest plus departures occurred in the Salt Lake and Utah Lake Valleys of Utah and in the Idaho and Wyoming areas. The minus departures were small and occurred at only a few stations in the extreme western portion of Utah.

The mean temperatures at the various stations ranged from 20° at Cokeville, Wyo., to 39.5° at Battle Mountain, Nev., where the temperature averaged 8.4° above normal, being the greatest plus departure for the month. The greatest minus departure was 2.1° at Frisco, Utah.

As a rule, the first half of the month was warm, the highest temperatures being recorded on various dates from the 1st to the 12th. The highest temperature reported was 74° at Battle Mountain, Nev., on the 2d, and at Iosepa, Utah, on the 8th. After the 15th the temperature fell promptly, and averaged normal or slightly below for the remainder of the month. The lowest temperatures were recorded in the last decade. The lowest was 13° below zero at Scipio, Utah, on the 22d. Only 12 stations out of 71 reported temperatures of zero or below.

**PRECIPITATION.**

The precipitation for the district averaged only slightly above normal. The map of precipitation shows a remarkably even distribution, which is unusual. The largest amounts fell on the western slope of the Wasatch Mountains, in Utah, and in the extreme western portion of Nevada and eastern portion of California. Most stations reported amounts above normal. At those stations reporting amounts below normal the deficiencies were small. In the Idaho, Oregon, Wyoming, and California areas good amounts were measured.

The section director of Utah, in referring to the precipitation of that area, says:

Contrary to the usual rule, the mountain districts did not receive the greatest amount of precipitation; but stations well scattered in all parts of the State are among those receiving heavy precipitation. However, those stations showing least precipitation are fairly well confined to the more level portion of the State and more or less distant from the mountains. The chronological precipitation distribution shows a dry week from the 12th to the 19th, but otherwise no long spells occurred without rain or snow. A general rain fell on the 3d, and general precipitation, mostly rain, fell from the 9th to the 12th. During the last 11 days of the month light scattered snows occurred nearly every day, some stations reporting several inches on the 19th and 21st, just previous to the hardest cold snap of the month.

The section director of Nevada reports:

The number of rainy days was about normal, and the cloudiness was nearly normal in the south portion, but greater than normal elsewhere.

As usual, the precipitation was heaviest on the eastern slope of the Sierra Nevada Mountains. Moderate amounts fell in parts of the west and north portions and in the extreme south. Most of the moisture fell during the first half of the month, and especially on the 2d and 3d, and from the 9th to the 12th.

**SNOW.**

The depth of snow at the higher altitudes on December 31, 1910, was less than it has been for years. Those correspondents who have ventured a prediction say that there will be a scarcity of water for irrigation during the coming season.

In the Utah area the ground was frozen in the higher regions, but the more level portions were bare of snow and unfrozen. Very nearly all correspondents reported amounts in the mountains below the average and below those observed on the last of December, 1909.

In the Nevada area most of the precipitation was in the form of rain. The average depth of snow for the month at the mountain stations was about 6 inches. This is only one-half the amount that fell in November. There was practically no snow on the ground at these stations on December 31, 1910, while the normal depth on that date ranges from 10 to 30 inches.

**GREAT SALT LAKE.**

The Weather Bureau established a gauge at Great Salt Lake in July, 1903, when the lake level was 0.8 foot. The reading on December 31, 1910, was 5.1 feet. During this period the highest reading was 7.1 feet on May 15, 1910, and the lowest, 1.1 below the zero of the gauge in November, 1905. The following table gives the average, highest, and lowest for each year since 1903:

	1903	1904	1905	1906	1907	1908	1909	1910
Averages.....	Feet. 0.4	Feet. -0.1	Feet. 0.3	Feet. 2.5	Feet. 3.5	Feet. 4.9	Feet. 6.0	
Highest.....	0.8	1.5	0.8	1.4	3.8	4.1	5.7	7.1
Lowest.....	-0.8	-0.5	-1.1	-1.0	0.5	3.0	3.4	5.0

**WEATHER BUREAU RECORDS AND THEIR USE.**

W. W. McLAUGHLIN, U. S. Irrigation Engineer, Logan, Utah.

The increasing activity in dry farming and the rapid development of irrigation enterprises in Utah during the past few years have created an extensive demand upon the part of the layman and the investor for information of the precipitation at various points in this State. With a comparatively small number of local observation stations of the Weather Bureau, it is often necessary to use the records obtained in one place as a basis of what may be anticipated at an adjoining place. These records have been used in many instances by persons not familiar with the many conditions influencing precipitation and the results arrived at by the layman have in most cases been erroneous. Several years' investigation of the precipitation records of this intermountain country has indicated to the writer that with our diverse topography and changeable air circulation there are several physical conditions that must be known and constantly kept in mind if it is wished to approximate the precipitation of one place from the records of another.

It is the wish of the writer in this article to impress upon the reader the importance of a proper understanding of this question and point out some of the more important physical features that influence local precipitation. It is not the purpose of this article to point out all the features which influence precipitation but only a few of the more important.



## PROXIMITY TO MOUNTAIN RANGES.

The influence of mountain ranges is more pronounced on the western side of the mountain than upon the eastern side, and the closer we are to the mountains the greater the precipitation. For example: Ogden Station No. 1, at the base of the Wasatch Mountains, has an average annual precipitation of approximately 25 per cent more than Ogden Station No. 2. The latter station is at the Union Depot and about 2 miles west of the base of the mountains. A second and more pronounced example is that of Fillmore and Deseret, in Millard County. Fillmore, at the base of the mountains, has an average annual precipitation twice as great as Deseret. Geographically, there is very little difference in the location of these stations, but Deseret is in the valley and a few miles from the base of the mountains. It is also a fact verified from the records that the closer we are to the mountains the more frequent the precipitation, and especially is this true of local thunderstorms.

## EASTERN OR WESTERN SLOPE OF THE MOUNTAINS.

The greater number of moisture-laden air currents of Utah come from the west, and, as a result, the western side of the mountain is the wet side. A summary of the precipitation records up to and including the year 1908 shows that the western half of the State has an average annual precipitation of 12.8 inches, while the annual average precipitation for the eastern half of the State is 6.4 inches. It is also observed from the same records that there is a material variation in the monthly distribution of this precipitation in those localities. On the western side the moisture is precipitated quite evenly during the months of November to May, inclusive, with a maximum precipitation during the month of March, or at the beginning of the growing season. On the eastern side, the precipitation is evenly distributed during August to November, inclusive, with a maximum precipitation during August and September, or at the close of the growing season. The records indicate that only about 11 per cent of the annual precipitation for the eastern slope occurs during December and January, or at a time when the precipitation would probably be in the form of snow. On the western slope about 17 per cent of the annual precipitation, or, expressed in inches, about three times as much moisture, falls during these months as falls on the eastern slope. This last fact is of importance when considering the amount of precipitation as a factor in stream flow. It is a well-known fact that the streams in the eastern part of Utah are subject to numerous floods during the summer and fall, with a high and rapid spring flow. The streams of the western part of the State are not subject to summer and fall floods, and maintain a more uniform flow in the spring and summer. This condition bears out the popular belief that the snow which falls before the middle of January becomes well packed and melts slowly, while the snow which falls in February and March remains more loose and melts very rapidly. The records of the Weather Bureau would indicate that the western slope of the mountains is best situated for an abundant supply of water in the streams during the late summer than is the eastern slope.

## PRECIPITATION ON DIFFERENT SIDES OF THE SAME VALLEY.

This condition is usually the result of eastern and western slopes. To illustrate, we may take the stations of Manti and Richfield. The former is on the eastern side of the valley and the latter on the western side. The average annual precipitation at Manti is 10.5 inches, while at Richfield it is about 6.7 inches. These two stations are both at the foot of the mountains, but the former with a western exposure and the latter with an eastern exposure. In some

few instances this relation may be reversed, due to the following fact:

## LOCAL AIR CURRENTS INFLUENCE THE AMOUNT OF PRECIPITATION.

In several sections of Utah there are well-known mountain passes through which local air currents pass, and the effect of this condition in influencing precipitation is more pronounced with local storms and summer showers than with general storms. In some instances it is possible to have more precipitation over a small area on the western side of the valley than on the eastern side of the same valley.

## ELEVATION AS A FACTOR IN AMOUNT OF ANNUAL PRECIPITATION.

From an agricultural standpoint the influence of this factor upon the amount of annual precipitation is of little importance except when considering the form of precipitation and its relation to water supply for irrigation. It is a commonly accepted idea, and probably a proven fact, that the precipitation increases with elevation, but in this State this condition is so overshadowed by other features that elevation in relation to quantity of precipitation may be disregarded. This may be illustrated by the following: At Levan, with an elevation of 5,010 feet, the annual average precipitation is 15.1 inches, while at Loa, with an elevation of 7,000 feet, there is an annual average precipitation of 6.5 inches. Soldier Summit, at an elevation of 7,054 feet, has only about two-thirds the annual average precipitation of Salt Lake City, which is at an elevation of 4,224 feet. The greater annual average precipitation at Levan and Salt Lake is accounted for from the fact that both are on the western slope and near the base of the mountains.

As stated previously in this article, it was not my intention to point out all the factors which influence the distribution of precipitation in Utah, but rather to emphasize the fact that there are physical features which exert a controlling influence when attempting to adapt the precipitation records of one place to a second place, and that these features must be taken into account.

It is a fact that the distribution of the annual and monthly precipitation is influenced greatly by these physical conditions. That these physical features are also a factor in anticipating the form of precipitation—that is, whether snow or rain—is also shown from a perusal of the records.

It is finally suggested that any one desiring an accurate estimate of the precipitation at any point in the State would do well to consult the section director of the Weather Bureau at Salt Lake City, Utah, who will willingly answer inquiries asked either in person or by letter.

## SEASONAL PRECIPITATION MEASUREMENTS.

By J. CECIL ALTER, Observer, Salt Lake City, Utah.

The first general attempt to obtain seasonal precipitation records in isolated regions has just been concluded, with a measure of success that seems to warrant the giving of much more attention to this matter. The feasibility of securing such records has been fairly well demonstrated by this season's trial, which was conducted along lines suggested by the writer, but under the supervision of Mr. A. H. Thiesen, section director in charge of the Salt Lake City office of the Weather Bureau.

No new tests were made of the comparative accuracy of the oil-film one-measurement gage as compared with the regular pattern of Weather Bureau gage, from which measurements are made after each rain, as it was thought that the slight discrepancy shown at the first trial, as reported in the Monthly Weather Review for November, 1907, is



much less than errors due to faulty exposure, and is therefore negligible at present. In the original experiment 0.20 inch of pure olive oil was placed on 0.20 inch of water in the regulation Weather Bureau 8-inch gage—with the funnel receiver, but without the inner tube. This gage was exposed alongside the tipping bucket, or self-recording gage, on April 16, 1907. On November 3, 1907, 6½ months later, 7.77 inches of precipitation, net, were measured from the seasonal gage; the total of the measurements from the regular gage for the same period was 8.03 inches, a discrepancy of about 3 per cent.

During this test it was observed that many of the smaller water drops remained suspended on the oil for some time before sinking, from which some evaporation must have taken place, accounting for a certain amount of the 3 per cent deficiency. However, it is only fair to assume that the errors due to splashing, measuring-stick displacements, creeping up the stick due to capillarity, personal element in measurements, and other sources of variation must have a share in the discrepancy. It is quite probable that a long test with an open gage, without the obstructing funnel to break the fall of the raindrops, would show a slightly greater, more nearly correct, amount, as even the smaller drops, having a greater momentum, would pierce the oil film at once. With these matters in view, it was decided to give this season's attention only to securing records, such as they might be, from places not already represented in the regular climatological reports for the State.

Early in the spring of 1910 a circular letter was addressed by Mr. Thiessen to a number of farmers and ranchmen in various parts of Utah, calling attention to the need for precipitation records in the remote regions, and inviting their cooperation in the comparatively simple task of acquiring this information. The prospective observers were directed to expose a small can with vertical sides in an unobstructed place in such a manner that it would not be molested by persons or animals. To prevent the loss of precipitation by evaporation, they were asked to obtain a few ounces of pure olive oil, sufficient to make a layer nearly a quarter of an inch thick over the bottom of the can. When rain falls in the can it will settle to the bottom, the oil forming an unbroken film on top and preventing evaporation.

The cans used by the observers varied from a 5-inch tomato can to a 5-gallon oil can, but it appears that the observers whose records are published in the accompanying table followed instructions with some care in regard to exposure, protection, and measurement.

A cursory examination of the table may create an unfavorable impression of these records, because of their lack of conformity with the accompanying records of regular cooperative stations; but anyone familiar with the striking differences in amounts of precipitation within very short distances in a mountainous country, particularly in the summer time, when all the rain comes in thunderstorms of more or less limited area, will readily see the futility of expecting a reconciliation of these records. However, the lack of uniform

receptacles is probably the cause of a small amount of these discrepancies, though it would not seem reasonable to assume the error from this cause to be any greater than the discrepancy errors between the various cooperative stations due to differing surroundings and exposures.

The actual topographical surroundings of most of the exposures were not accurately learned except in a general way, so that a satisfactory discussion of the table is impracticable. However, it is noted that while most of the seasonal records are less than the adjacent regular records, some are also greater; and as nearly as can be determined all the deficient seasonal records came from regions more or less distant from the foothills, where less precipitation would naturally be expected; also, the excesses at Ephraim (near) and Tremonton (near) are derived nearer the foothills than the comparative records at Manti and Garland, respectively. It is understood that nearly all, if not all, of these records were made on farms at some distance from the town or place mentioned in the table.

The Ogden record was made at Hot Springs, about 10 miles northwest of that city, and the much smaller amount there is in conformity with the rapid decrease in amount from Ogden 1 (east side) to Ogden 2 (Union Station) as shown in the regular reports of the Utah section. Kanosh with 5.47 inches, and Fillmore with 6.04 inches, measured by cooperative observers, are 16 miles apart; Meadow, with 5.90 inches from a seasonal gage, lies just halfway between, thus showing consistency. Sterling and Manti are similarly situated topographically, and similar amounts of precipitation were measured.

It must not be understood that, even if it were practicable to have a reliable seasonal summer gage in every township, the data obtained would meet any important demand in itself. The entire year's precipitation must be known to enable the western farmer to draw intelligent conclusions. In fact, many of the most careful arid farmers are inclined to belittle the spring and early summer rains, even to the extent of saying these rains are worse than none at all as a general rule; they "break the mulch" so that a reworking of the mulch soil layer is necessary, and are usually too light to go through the mulch layer to increase the supply held in the lower soil from the previous fall and winter precipitation.

The need appears to be for a great many light, portable gages, with snow hoods for winter and oil films for summer, for exposure in the remoter regions; and for more elaborate, more accurate, gages for use in regions of heavy precipitation, which can be more readily reached. The results of the present seasonal snow-gage experiments and trials by Prof. C. F. Marvin, in charge of the Instrument Division of the Weather Bureau, are being anxiously awaited by the western farmer and engineer, who are insistently demanding, and in some cases getting for themselves, more numerous precipitation records over the sparsely settled and uninhabitable regions of the West. Some of these experiments are to be conducted under the supervision of the Salt Lake office.

Seasonal precipitation data obtained from receptacles containing oil, Utah, 1910.

Place.	County.	Period of exposure.	Amount.	Same period at adjacent regular cooperative stations.		Observer.
				Amount.	Station.	
Alton.....	Kane.....	June 1 to Nov. 1.....	10.00	12.35	Ranch 4 miles sw.....	Jonathan Heater.
Ephraim.....	Sanpete.....	May 1 to Oct. 1.....	4.75	3.98	Manti 10 miles s.....	Wm. W. Armstrong.
Fairview.....	do.....	Apr. 1 to Oct. 1.....	4.00	5.94	Moroni 12 miles sw.....	Walter Cox.
Glendale.....	Kane.....	May 1 to Oct. 1.....	4.62	6.87	Orderville 4 miles s.....	N. J. Levanger.
Helper.....	Carbon.....	Apr. 1 to Oct. 1.....	10.75	.....	None comparable.....	J. Tom Fitch.
Meadow.....	Millard.....	do.....	5.90	5.47	Kanosh 8 miles s.....	Edwin Stott.
Oak City.....	do.....	Apr. 15 to Oct. 15.....	4.00	5.50	Oak City (estimated).....	Simson Walker.
Ogden.....	Weber.....	Apr. 3 to Oct. 3.....	1.25	4.24	Ogden 1, 10 miles so.....	J. A. Dial.
Scipio.....	Millard.....	Apr. 20 to Oct. 15.....	4.00	5.31	Scipio.....	Orson Wasden.
Sterling.....	Sanpete.....	June 10 to Oct. 1.....	3.25	3.31	Manti 8 miles n.....	Ephraim Denison.
Tremonton.....	Boxelder.....	May 15 to Oct. 1.....	2.00	1.06	Garland 2 miles n.....	Abraham Hunsaker.



TABLE 1.—Climatological data for December, 1910. District No. 10, Great Basin.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, all inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.
Wyoming.																			
Border	Uinta	6,085	9	20.7	+ 6.5	43	1	- 3	19	37	0.32	- 0.55	0.17	3.5	6	10	4	17	S. W. Condron.
Cokeville	do.	6,204	1	20.0		41		- 8	26	29	0.49	- 0.18	0.18	4.5	5	19	4	8	E. J. Tuckett.
Evanston	do.	6,860	13	25.8	+ 5.3	57	1	0	14	41	1.35	- 0.03	0.54	4.0	5	12	9	10	Frank Tucker.
Idaho.																			
Geneva	Bear Lake	5,400	3			55	1	7	28	32	1.14		0.98	6.0	6	23	6	2	F. W. Boehme.
Grace	Bannock	5,400	4	29.6		55	1	7	28	32	1.07		0.44	4.1	6	13	6	12	Cyril B. Dickson.
Paris	Bear Lake	5,946	16			54	2	9	22	30									John Norton.
Stone	Oneida	4,520	1	31.5		62	3	3	31	42	0.62		0.35	1.0	3	12	1	18	Thos. W. Roe.
Weston	do.	4,460	13	30.3	+ 5.6	51	1	7	26	26	1.10	+ 0.09	0.32	2.0	7	8	3	20	Wm. Chatterton.
Utah.																			
Alpine	Utah	4,900	14								1.36	+ 0.10	0.40	3.2	6	9	4	18	George Stevens.
Beaver	Beaver	6,000	7	32.4		61	2	8	22	31	1.72		0.55	12.7	8	7	16	8	James Connell.
Black Rock	Millard	4,872	10	29.4		59	1	- 9	29	41	0.28		0.28	3.5	1	4	10	17	W. D. Livingston.
Castle Rock	Summit	6,244	8								1.21		0.35	6.5	8	10	7	14	David Moore.
Cedar City	Iron	5,750	6																Parley Dalley.
Corinne	Boxelder	4,240	41	30.0	+ 1.0	52	10	14	27	29	1.38	- 0.17	1.00	0.5	4	2	8	21	A. C. Murphy.
Deseret	Millard	4,541	16	29.6	+ 3.7	61	9	2	22	34	0.53	+ 0.00	0.30	3.0	4	7	3	21	S. W. Western.
Farmington	Davis	4,267	11	34.0	+ 2.7	51	10	14	22	23	2.24	+ 0.45	0.50	7.2	10	11	9	11	Charles Boylin.
Fillmore	Millard	5,100	20	33.0	+ 2.5	62	1	7	22	37	1.70	+ 0.60	0.44		7				J. J. Starley.
Frisco	Beaver	7,318	16	32.4	- 2.1	60	2	8	28	28	0.53	+ 0.13	0.23		3				E. R. Smyth.
Garrison	Millard		7																F. M. Smith.
Government Creek	Tooele	5,277	10	36.0	+ 0.9	56	2	4	22	28	0.53	- 0.30	0.24		4	5	9	16	Walter James.
Grantsville	do.		2																Allen J. Fraser.
Grouse Creek	Boxelder										1.03		0.44	0.0	4	19	8	4	Phillip Paakett.
Heber	Wasatch	5,606	18	28.4	+ 5.5	58	1	- 5	22	35	1.47	- 0.16	0.75	5.5	6	17	3	11	John Crook.
Henefer	Summit	5,301	12	31.2	+ 7.1	63	1	2	26	41	1.90	+ 0.30	0.43	5.2	10	13	4	14	Wm. Brewer.
Ibapah (near)	Summit	7,500	8	28.8		56	1	1	26	34	1.74		0.54	17.7	7	17	3	10	J. S. Lawton.
Ibex	Millard			33.8		66	9	13	22	30	0.44		0.40	3.0	2	3	4	24	John J. Watson.
International	Tooele	5,370	1	32.6		56	8	12	26	25	0.57		0.28	6.8	4	10	10	11	I. S. & R. Co.
Joseph	do.			36.4		74	8	12	26	53	0.34		0.15	0.9	4	11	0	20	Geo. K. Hubbell.
Kanosh	Millard	5,250	3	27.2	- 0.4	46	2	2	31	32	0.50	- 0.23	0.15	1.0	4	6	19	6	Geo. Crane.
Kelton	Boxelder	4,230	33	27.2	- 0.4	46	2	2	31	32	0.50	- 0.23	0.15	1.0	4	6	19	6	F. W. Klock.
Levan	Summit	5,010	22	29.2	+ 3.6	55	9	2	27	28	1.35	- 0.31	0.58	8.1	6	10	2	19	Wm. Brown.
Logan	Cache	4,507	20	29.9	+ 4.0	52	8	6	31	24	1.45	+ 0.43	0.40	4.7	9				Utah Exp. Station.
Lucin	Boxelder	4,504	7	31.4		62	1	- 4	26	48	0.96		0.05		4	3	16	12	C. J. Burke.
Manti	Sanpete	5,575	17	26.6	+ 1.0	48	9	0	22	24	0.98	+ 0.18	0.43	7.0	6	11	0	20	J. M. Anderson.
Marion	Summit	6,750	7								1.78		0.43		5.5	11	6	14	Jas. Woolstenhulme.
Marysville	Piute	6,290	12	29.9	+ 3.5	64	9	3	27	43	0.91	+ 0.23	0.31	9.3	7	5	9	17	John W. Henry.
Meadowville	Rich	6,200	11	27.9	+ 2.7	53	2	8	26	32	1.15	+ 0.04	0.55	0.2	5	19	2	10	J. S. Moffat.
Millford	Beaver	4,962	7	29.6		62	3	- 6	29	37	1.20		0.80	12.0	2	8	8	15	J. C. Manuel.
Millville	Cache	4,848	16								1.77	+ 0.72	0.67		7	6	16	9	Fred Yates.
Minersville	Beaver	5,070	13								1.41	+ 0.56	0.68	13.0	6				Geo. Roberts, sr.
Modena	Iron	5,479	10	31.1	- 0.6	64	1	6	27	36	0.35	- 0.23	0.14	2.4	7	3	13	15	U. S. Weather Bureau.
Morgan	Morgan	4,280	8	30.8		58	1	5	22	35	4.00		1.00	9.0	8	8	13	10	W. Vlack.
Moroni	Sanpete	5,519	3	32.0		60	1	5	22	35	1.20		0.44	5.3	9	14	2	15	B. F. Eliason.
Mount Nebo	Utah	4,650	9	26.5		46	11	7	27	29	1.15		0.45	6.0	4	8	5	9	D. C. Walkey.
Nephi (near)	Summit	6,059	8								0.84		0.65		3				S. Boswell.
Oak City	Millard	4,900	7																Peter Nielson.
Ogden	Weber	4,310	9	33.7		51	1	15	22	21	1.18		0.34	1.0	7	7	6	17	Enoch Farr.
Park City	Summit	7,800	14								0.61	- 1.34	0.26		8	16	9	6	Irvin Evans.
Parowan	Iron	5,970	20	34.2	+ 5.4	64	1	10	31	35	1.79	+ 0.92	0.85		4	11	0	20	S. M. Matheson.
Payson	Utah	4,637	8								1.80		0.48	9.0	8	4	11	16	D. L. Coombs.
Pinto	Washington	5,907	14	34.0	+ 6.9	61	1	1	31	36	0.71	+ 0.05	0.36	9.0	4	3	6	12	J. L. Stark.
Promontory	Boxelder	4,913	39																F. C. Houghton.
Provo	Utah	4,532	22	31.8	+ 2.5	61	1	3	22	35	1.85	+ 0.33	0.45	6.0	7	7	12	12	James A. Oliver.
Randolph	Rich	6,442	8								0.57		0.32		4	17	0	14	Wm. Rex.
Richfield	Sevier	5,350	20	30.2	+ 1.6	64	9	5	22	32	0.92	+ 0.27	0.42	5.0	4	15	6	10	Joseph J. Jensen.
Saltair	Salt Lake	4,220	8	34.8		54	9	18	26	16	0.87		0.21	4.8	10				E. J. Bench.
Salt Lake City	do.	4,360	37	35.4	+ 3.3	56	1	18	22	21	1.16	- 0.17	0.30	7.1	10	6	6	19	U. S. Weather Bureau.
Scipio	Millard	5,260	17	29.6	+ 3.0	63	1	- 13	22	47	1.24	+ 0.21	0.61	3.0	5	6	4	21	Thos. Memmott.
Silver City	Summit	6,127	1								0.80		0.24	6.0	8	11	7	13	J. L. Stark.
Spanish Fork	Utah	4,585	1	33.2		50	1	14	26	22	3.84		1.80	25.0	8	10	11	10	U. S. Reclamation Service.
Strawberry Tunnel	do.	7,650	5	28.2		55	1	2	26	34	2.70		0.45	27.0	12	16	6	9	Do.
Thistle	do.	5,075	19	28.8	+ 2.3	50	2	- 4	20	34	2.32	+ 0.89	0.52	8.0	9	15	3	13	John Thorgeimson.
Tooele	Tooele	4,900	15	29.0	- 1.5	47	3	15	26	17	0.74	- 0.24	0.19	3.0	4	9	18		E. A. Bonelli.
Utah Lake Pumping Sta	Utah	4,500	6																W. A. Knight.
Woodruff	Rich	6,500	12	29.9	+ 4.1	56	1	- 7	26	46	0.10	- 0.68	0.08	1.0	2	12	8	11	J. Sidney Pusey.
Oregon.																			
Burns	Harney	4,157	20	26.6	+ 1.0	50	2	0	20	31	1.27	+ 0.05	0.48	17.0	5	24	4	3	J. C. Welcome, jr.
Christmas Lake	Lake	4,300	3	30.6		53	1	3	22	38	0.86		0.25	2.0	8	4	9	18	John C. Green.
Paisley	do.	4,500	7																E. C. Woodward.
California.																			
Al Tahoe	Eldorado	6,235																	C. W. H. Bolingbroke.
Glen Alpine Springs	do.	6,850																	Carl Fleugge.
Tahoe	Placer			34.5		52	1	15	26	24	3.90			3.0	6	12	8	11	R. M. Watson.
Truckee	Nevada	5,819	39	29.6	+ 0.9	60	1	- 5	28	45									Southern Pacific Co.
Nevada.																			
Aurora	Esmeralda	6,594	21																J. I. Cain.
Austin	Lander	4,843	39	39.5	+ 8.4	74	2	8	18	48	1.23	+ 0.53	0.50	5.0	5	17	2	12	Forest Service.
Battle Mountain	do.	4,905	39	32.0	+ 2.2	60	4	5	19	38	1.42	+ 0.65	0.50	4.0	4	17			



TABLE 1.—Climatological data for December, 1910. District No. 10—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		
Nevada—Continued.																			
Jean	Clark	2,074	2																Salt Lake Route.
Leetville	Churchill	4,020	3																U. S. Reclamation Service.
Lower's Ranch	Washoe	5,500	22	37.0	+ 2.6	65	1	12	26	31	4.55	+1.14		7.0	5	10	17	4	Ross Lewers.
Lovelock	Humboldt	3,977	7																C. H. Allender.
McAfee's Ranch	Esmeralda	4,835	6																C. H. Rodenkirch.
Millet	Nye		2	30.4		59	1	— 2	22	43	0.79		0.34	0.0	3	12	7	12	n.
Mina	Esmeralda	4,600	3	39.1		66	3	14	14†	37	0.70		0.40	7.0	3	9	6	16	n.
Falmotto	do	6,780	20	43.2	+12.0	68	7†	7	31	55	0.53	—0.49	0.28	8.5	5				s.
Potts	Nye	6,990	17	28.0	+ 3.1	58	2	— 8	26	41	0.27	—0.24	0.20	6.0	3	5	6	20	s.
Quinn River Ranch	Humboldt	4,850	8	35.1 <sup>b</sup>		68 <sup>b</sup>	1	13 <sup>b</sup>	1	55 <sup>b</sup>	1.43		0.58	0.0	6	17	3	11	w.
Reno	Washoe	4,532	39	37.0	+ 3.3	64	1	13	19	39	1.44	—0.23	0.74	3.1	9	7	10	14	w.
Soda Lake	Churchill	4,534	3	34.2		61	8	13	30	36	0.45		0.30	2.2	3	9	13	9	n.
Tecoma	Elko	4,812	32	27.2	+ 1.1	58	1	— 8	26	46	0.12	—0.55	0.10	0.0	3	5	7	19	
Tonopah	Nye	6,090	3	34.9		56	1	14	31	21	0.75		0.64	10.8	4	7	18	6	w.
Wabuska	Lyon	4,347	7																
Wells	Elko	5,631	38								2.05	+1.02	1.00	6.0	6	10	6	15	s.
Winnemucca	Humboldt	4,432	31	33.2	+ 2.5	59	1	9	28	39	2.01	+1.02	0.89	3.0	10	9	6	16	no.
																			Southern Pacific Co.
																			U. S. Weather Bureau.



TABLE 2.—Daily precipitation for December, 1910. District No. 10, Great Basin.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Wyoming.																																		
Border.	Bear.		.06						.02	T.	T.	.17														T.			.02	.03	.02			0.32
Cokeville.	do.		.18	.12	T.					T.	.02	.09	T.									T.			T.						T.	.08		0.49
Evanston.	do.			.09						.37	.24	.54											T.		T.				T.			T.	.11	1.35
Idaho.																																		
Geneva.	Bear.			.98								.09											T.	.03						.02	.01	.01	1.14	
Grace.	do.		.40						T.		.11	.44										T.	T.					.04	T.		.06	.02	1.07	
Oxford.	do.																																	
Paris[].	do.		.50									.25																						
Stone.	Deep Creek.			.35							.24																				.03		0.62	
Weston.	Bear.		.32	.20							.18	.31																	.10		.05	.03	1.19	
Utah.																																		
Alpine.	Great Salt Lake.		.40							.10	.36	.20											.30	.32		.25				.05			1.36	
Beaver.	Sevier Lake.		.05								.25	.15											.30	.32			.55	.05				.05	1.72	
Black Rock.	do.												T.										.28				T.					T.	0.28	
Castle Rock.	Great Salt Lake.		.10	.05						.30	.35	.31		.04										.03								.03	1.21	
Cedar City.	Desert.																																	
Corinne.	Great Salt Lake.								.23		1.00	.10																			.05		1.38	
Deseret.	Sevier Lake.		.02									.20										T.	.30									.01	0.53	
Farmington.	Great Salt Lake.		.05	.06				T.		.23	.47	.50	.21										.10						.10		.12	.40	2.24	
Fillmore.	Sevier Lake.		.01									.44	.14										.40	.18			.10					.43	1.70	
Frisco.	Desert.											.20											.23				.10						0.53	
Garrison.	do.																																	
Government Creek.	do.		.02								T.	.07												.20									.34	0.53
Grantsville.	Great Salt Lake.																																	
Grouse Creek.	Desert.		.20	.11						T.	.44	.28																					T.	1.03
Heber.	Great Salt Lake.		.16							.05	.75	.00										*	.35										T.	1.47
Henefer.	do.		.02	.42						.15	.43	.29	.05											.05										1.90
Ibapah (near).	Desert.		.07								.04	.30	.23										.54	.30									.26	0.44
Ibex.	do.		T.																				.40											0.57
International.	Great Salt Lake.									T.	T.	.28												.22							.01		.06	0.34
Iosepa.	Sevier Lake.										.15	.10											.04									.05	1.73	
Kanosh.	Great Salt Lake.												.60															.32						1.0
Kelton.	Sevier Lake.		.15								.15	.10																T.						1.35
Levan.	Great Salt Lake.		*	.20					.09	.05	.21	.40																						1.45
Lucin.	Desert.		.05	.05						.05	.05	T.															.06			.02	.08	.05	.26	0.20
Manti.	Sevier Lake.											.43	.10															.04					.11	0.96
Marion.	Great Salt Lake.		.05	.07				T.		.07	.41	.23	.22										.16	.14				.13			.05		.10	1.78
Marysville.	Sevier Lake.		.08	.03							.18	.05											.31	.08			.18							0.91
Meadowville.	Great Salt Lake.		T.	.55						.20	.30	.05																				.05		1.15
Milford.	Sevier Lake.										T.	T.											.40				.80							1.20
Millville.	Great Salt Lake.		.57							.16	.18	.57															.05			T.		.07	.17	1.77
Minersville.	Sevier Lake.											.02	.07														.68	.13				.10	1.41	
Modena.	Desert.		T.								.01	.11	.01									.05	.09			.01	.07	T.	T.				T.	0.35
Morgan.	Great Salt Lake.		.30	.20					1.00	.80	.80	.80												.10							.60	.20		4.00
Moroni.	Sevier Lake.		.15	.03					T.		.09	.44	.17										.21	.04						.04			.03	1.20
Mount Nebo.	Great Salt Lake.										.20	.45											.21	.29									T.	1.15
Nephi (near).	do.											.15																					.04	0.84
Oak City.	Sevier Lake.																																	
Ogden.	Great Salt Lake.		.22	.05						.11	.34	.23	.11																					1.16
Panguitch Lake.	Sevier Lake.																																	
Park City.	Great Salt Lake.		.02	.08										.01																				0.61
Parowan.	Desert.										.85																							1.79
Payson.	Great Salt Lake.		.05	.04						T.	.08	.17	.48											.40									.34	1.80
Pinto.	Desert.										.15																							0.71
Promontory.	Great Salt Lake.																																	
Provo.	do.		.10							T.	.20	.40	.45											.10	.40							.20	1.85	
Randolph.	do.		.03	.15							.07	.32																						0.57
Richfield.	Sevier Lake.												.42																					0.92
Saltair.	Great Salt Lake.		.03	.01						.01	.21	.12	.11											.20				.20			.07		.10	1.2
Salt Lake City.	do.		.02							.08	.20	.28	.02											.15	.17					T.	.06		.15	1.16
Scipio.	Desert.		.09									.61	.10											.36				T.				.08		1.24
Sevier Mine.	Sevier Lake.																																	
Silver City.	Desert.			.01							.02	.24	.13																				.01	0.80
Spanish Fork.	Great Salt Lake.		.50	.09							.10	*	.65											.30	.30						.10	*	1.80	3.84
Strawberry Tunnel.	do.		.35	.30					T.	.10	.05	.15												.20	.30	.15		.10			.45	.25	.30	2.70
Thistle.	do.																																	



TABLE 2.—Daily precipitation for December, 1910. District No. 10—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Nevada.																																		
Aurora.....	East Walker.....																																	
Austin.....	Reese.....																																	
Battle Mountain.....	Humboldt.....			.27						.20	.20	.06						.50																1.23
Beowawe.....	do.....		.32							.48		.50					.12																	1.42
Carlin.....	do.....																																	
Carson Dam.....	Carson.....																																	
Cherry Creek.....	Humboldt.....			.30	.03						T.	.50									.20										T.	T.	1.03	
Clover Valley.....	do.....																																	
Cobre.....	do.....			T.						.03	.22	.13																						0.38
Columbia.....	Desert.....																	.01		*	.58					.50							1.09	
Dutton.....	Humboldt.....									.20		.30						.10														.05	0.65	
Elko.....	do.....			.07			T.			.03	.00	.07																T.			.01		0.27	
Ely.....	do.....																	.46	.16														0.62	
Eureka.....	do.....			.10								.20									.15							.05			.05	.08	0.63	
Fallon.....	Carson.....		.05	.10			T.				.07	.06					*	.25							.02						.01		0.56	
Fernley.....	Truckee.....																																	
Gardnerville.....	Carson.....			.01	.36		T.				T.	.60														T.	.20							1.17
Geyser.....	Humboldt.....																																	
Glenbrook.....	Truckee.....			*	.60					.06	*	.45					*	.50								.50					*	.10	2.21	
Golconda.....	Humboldt.....									.40	.50	.30						.30														.10	1.60	
Hallock.....	do.....		.09							.39	.43																				T.	.15	1.06	
Jean.....	Desert.....																																	
Leetville.....	Carson.....																																	
Lewer's Ranch.....	Truckee.....			*	2.85							1.00						.30								.40								4.55
Lovelock.....	Humboldt.....																																	
McAfee's Ranch.....	Desert.....																																	
Millett.....	Reese.....			.30						.15																								0.79
Mina.....	Desert.....																	.20		.40		.10											0.70	
North Fork.....	Humboldt.....	*	.75					T.	.30	.50																					.04	.50	2.09	
Palmetto.....	Desert.....																			.12	.04	.28	.30		.10		.04	.05					0.93	
Paradise Valley.....	Little Humboldt.....																																	
Potts.....	Reese.....			T.							T.	.05						T.			.20								T.			T.	.02	0.27
Quinn River Ranch.....	Humboldt.....			.22					.06	.29	.36	.58						.02																1.43
Reno.....	Truckee.....		.20	.55			T.				.42	.08					.05	.08		T.				T.	.02	.03					.01		1.44	
Rose Creek.....	Humboldt.....		.10	.70		.03			.06	.80	.30	.36						.70															3.21	
Smith.....	West Walker.....		T.	.26						.06	.05							.20															0.60	
Spooner's Ranch.....	Truckee.....	*	1.76				T.	T.		.06	*	.68						.20															3.03	
Soda Lake.....	Carson.....		T.	.13														.30				.02											0.45	
Sweetwater.....	East Walker.....													.20	.25	.27	.22	.05				T.				.05	.10						1.14	
Tecoma.....	Humboldt.....								.01	.01	.10																							0.12
Tonopah.....	Desert.....										T.							.01		.38	.26					.10							0.79	
Wabuska.....	Walker.....																																	
Wells.....	Humboldt.....	*	.05						*	1.00	.80	.20					*	.40																2.05
Willow Point.....	Little Humboldt.....			.18						*	.36																							0.94
Winnemucca.....	Humboldt.....		.11	.44			.02		.01	.48	.57	.06					T.	.30											T.		.01	.01		2.01



TABLE 3.—Maximum and minimum temperatures at selected stations, December, 1910. District No. 10, Great Basin.

Date.	Wyoming.						Utah.																							
	Border.		Evanston.		Weston, Idaho.		Corinne.		Deseret.		Government Creek.		Thapah.		Marysvale.		Meadowville.		Modena.		Ogden.		Parowan.		Provo.		Salt Lake City.			
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1....	43	16	57	22	51	25	30	23	59	25	52	29	56	33	59	25	43	18	64	28	51	30	64	29	61	26	56	35		
2....	36	30	56	25	42	28	32	24	50	25	56	32	48	33	60	21	55	25	58	28	48	31	59	32	50	25	51	35		
3....	33	28	46	35	44	35	42	25	45	37	49	39	42	32	62	34	45	34	56	32	47	31	59	32	49	35	52	41		
4....	33	22	38	28	44	32	36	23	47	30	49	30	34	18	46	27	38	25	49	23	46	34	53	26	47	29	50	36		
5....	27	5	37	18	45	29	40	27	48	15	43	23	41	15	46	11	36	22	43	15	42	28	49	20	46	20	47	30		
6....	38	19	42	9	41	21	38	20	44	19	43	23	43	25	49	17	54	12	54	22	41	29	51	26	53	21	47	30		
7....	39	10	43	26	46	29	33	22	53	21	47	20	44	27	52	18	42	25	58	26	46	30	60	26	55	25	50	35		
8....	40	20	43	16	41	31	30	26	52	21	51	26	46	28	53	20	39	20	58	25	43	29	55	29	50	24	53	34		
9....	34	20	42	33	47	36	30	26	61	32	54	41	41	34	64	21	42	31	53	34	50	39	49	32	52	38	54	40		
10....	38	24	38	32	40	33	52	23	46	33	48	32	39	32	55	27	39	31	54	31	42	38	52	34	48	35	47	40		
11....	39	24	37	32	41	36	50	22	48	34	40	37	37	28	54	38	41	33	48	33	43	39	53	34	50	39	51	40		
12....	37	27	37	29	46	33	49	34	49	34	44	35	30	24	46	34	37	32	47	29	45	37	52	29	47	32	46	37		
13....	28	14	32	2	40	24	46	30	39	22	38	20	42	12	43	27	34	24	45	25	40	29	49	28	46	25	43	31		
14....	21	12	36	0	41	18	43	27	36	22	32	20	49	21	33	16	29	14	35	19	37	28	48	28	40	21	39	28		
15....	20	8	40	1	31	20	37	21	29	26	28	20	52	22	43	14	31	14	29	18	37	29	48	20	36	21	35	32		
16....	24	-1	47	6	31	27	34	30	26	24	26	20	48	21	42	8	32	17	26	17	38	29	46	12	36	24	35	29		
17....	24	0	40	8	39	22	32	30	29	21	26	20	39	20	45	21	35	15	32	13	32	27	46	13	35	26	33	27		
18....	23	2	41	5	38	16	30	29	29	27	27	21	45	11	37	16	32	16	34	17	33	20	45	15	36	28	35	26		
19....	34	3	44	10	29	15	30	29	28	25	24	14	47	23	40	9	37	19	30	19	32	27	40	13	31	28	33	27		
20....	34	3	35	17	34	16	35	21	28	23	28	20	35	22	36	20	40	20	34	21	32	26	37	17	31	26	31	26		
21....	33	4	30	18	34	25	28	17	38	25	30	13	26	10	34	22	35	19	41	26	35	28	35	23	28	21	35	28		
22....	23	2	23	2	36	12	32	20	30	5	32	4	32	4	34	1	29	12	30	15	34	15	40	18	36	3	35	18		
23....	30	4	34	13	35	18	30	21	29	2	41	14	44	16	36	0	38	16	37	14	36	21	45	15	37	7	36	22		
24....	35	5	35	22	40	22	41	18	34	11	40	28	36	28	47	13	38	25	49	23	37	29	50	25	38	14	38	28		
25....	29	6	30	1	36	10	36	18	32	24	34	19	29	11	38	14	30	14	30	23	35	19	43	18	40	13	35	25		
26....	27	7	31	0	32	7	38	21	31	2	31	9	32	1	30	10	26	8	28	8	33	19	38	14	34	5	34	20		
27....	26	10	27	2	30	10	40	14	27	3	29	14	22	12	26	3	30	10	36	6	33	19	32	13	35	9	33	19		
28....	24	4	22	5	30	13	36	16	32	2	28	12	23	5	36	4	27	15	29	8	32	26	34	15	33	13	33	24		
29....	29	11	27	8	34	16	38	19	33	3	34	13	38	8	32	2	31	15	35	7	37	26	34	16	39	7	37	25		
30....	30	6	32	12	33	24	36	23	40	17	36	26	32	15	43	16	31	21	38	18	37	28	36	18	44	20	42	29		
31....	31	7	28	10	29	16	30	22	36	16	32	9	19	3	26	5	25	10	30	17	32	21	40	10	35	14	30	20		
Mns..	30.4	11.0	37.1	14.4	38.6	22.5	36.6	23.3	30.0	20.2	38.1	22.0	38.4	19.2	43.5	16.3	36.1	19.7	41.6	20.6	39.3*	28.1*	46.5	21.9	41.9	21.7	41.2	29.6		

Date.	Nevada.																											
	Burns, Oreg.		Elko.		Ely.		Eureka.		Fallon.		Jean.		Loveock.		Millet.		Mina.		Quinn River Ranch.		Reno.		Tecom.		Tonopah.		Winnemucca.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	44	21	57	17	68	29	64	32	57	15	.....	.....	.....	.....	50	16	62	30	68	13	64	25	58	14	56	43	59	20
2....	50	34	58	19	65	32	53	37	52	21	.....	.....	.....	.....	49	23	62	34	51	25	56	42	54	16	55	45	54	27
3....	44	26	50	12	68	29	45	34	50	40	.....	.....	.....	.....	49	36	66	34	49	39	49	39	56	14	49	40	47	26
4....	42	20	45	23	62	33	43	26	52	20	.....	.....	.....	.....	48	31	64	36	49	31	51	28	52	18	43	28	47	28
5....	43	9	49	24	67	31	46	20	44	17	.....	.....	.....	.....	41	11	56	20	49	22	40	24	48	16	46	32	42	25
6....	44	24	51	28	63	30	50	30	50	27	.....	.....	.....	.....	45	23	60	34	43	21	55	30	46	18	52	38	46	25
7....	42	22	50	20	66	28	50	30	49	28	.....	.....	.....	.....	51	28	60	40	49	18	48	33	52	18	52	41	49	24
8....	40	20	52	18	59	23	56	30	66	26	.....	.....	.....	.....	58	29	58	32	40	28	60	39	48	20	49	40	54	32
9....	42	22	50	29	43	20	54	35	59	43	.....	.....	.....	.....	58	39	60	34	43	35	61	44	46	18	54	40	50	40
10....	44	28	50	27	56	26	47	36	53	36	.....	.....	.....	.....	50	34	58	42	46	38	56	44	44	18	45	37	48	40
11....	40	18	50	35	57	34	42	35	56	36	.....	.....	.....	.....	51	36	60	34	55	35	54	36	42	20	46	34	45	35
12....	42	16	48	27	64	36	46	35	53	27	.....	.....	.....	.....	48	23	56	30	56	26	48	33	46	28	44	31	50	31
13....	34	14	44	19	62	31	47	20	49	20	.....	.....	.....	.....	48	12	54	26	59	25	50	29	48	18	44	30	51	28
14....	32	14	46	8	66	30	52	20	40	16	.....	.....	.....	.....	48	10	52	14	50	18	34	26	44	22	46	33	48	25
15....	34	18	42	12	56	29	52	22	33	13	.....	.....	.....	.....	47	7	48	18	50	20	40	24	42	18	51	30	45	23
16....	34	14	43	16	59	32	51	20	35	22	.....	.....	.....	.....	47	6	51	14	37	20	51	21	36	14	46	27	41	22
17....	32	1	45	13	65	38	42	22	37	30	.....	.....	.....	.....	44	14	48	30	46	28	35	30	36	13	36	22	37	25
18....	19	2	42	10	61	32	49	16	40	14	.....	.....	.....	.....	50	14	56	26	57	23	39	18	38	14	45	26	39	19
19....	25	9	50	15	67	33	51	18	40	13	.....	.....	.....	.....	52	12	48	22	41	18	39	13	32	16	42	24	40	13
20....	24	0	48	32	62	28	43	28	43	27	.....	.....	.....	.....	45	30	46	34	43	18	47	29	36	15	30	24	37	22
21....	34	4	37	21	58	29	35	18	34	26	.....	.....	.....	.....	34	2	48	22	42	21	42	24	38	14	25	21	37	16
22....	36	9	37	11	51	20	36	7	30	25	.....	.....	.....	.....	34	1	50	24	41	15	43	24	36	12	34	23	37	12
23....	36	5	49	16	38	1	47	16	32	26	.....	.....	.....	.....	30	3	46	20	43	15	39	23	40	0	42	27	43	11
24....	37	9	56	28	49	10	44	25	40	27	.....	.....	.....	.....	38	13	46	22	46	23	46	26	38	4	40	31	43	21
25....	35	14	48	14	60	26	36	16	47	28	.....	.....	.....	.....	35	19	43	32	46	18	39	25	36	— 6	32	21	38	19
26....	38	5	38	5	56	25	35	6	41	14	.....	.....	.....	.....	33	4	38	21	.....	.....	41	19	38	— 8	25	16	39	11
27....	42	9	36	13	60	28	30	12	42	19	.....	.....	.....	.....	35	5	39	18	.....	.....	39	22	42	0	29	18	36	13
28....	44	24	34	8	65	30	30	8	44	13	.....	.....	.....	.....	38	3	42	17	40	33	44	17	36	9	27	16	38	9
29....	35	8	36	9	40	19	31	10	35	14	.....	.....	.....	.....	28	2	38	18	34	14	46	23	32	2	30	23	37	14
30....	37	14	38	11	42	21	38	18	42	12	.....	.....	.....	.....	44	10	48	16	39	19	45	28	30	3	33	19	37	22
31....	44	22	38	15	44	16	29	14	38	18	.....	.....	.....	.....	37	15	47	22	40	25	39	19	28	7	22	14	34	22
Mns.	38.4	14.7	45.7	17.9	58.0	26.7	44.3	22.5	44.6	23.0	.....	.....	.....	.....	44.5	16.4	51.9	26.3	46.6	23.6	46.5	27.6	41.9	12.4	41.0	28.8	43.5	22.9



**Climatological Data for December, 1910.**  
**DISTRICT No. 11, CALIFORNIA.**

Prof. ALEXANDER G. MCADIE, District Editor.

**GENERAL SUMMARY.**

December will be long remembered as a dry month. The weather was unusually pleasant, but unfavorable for farming operations, as the ground in most places was too dry for plowing. With the exception of the two rainy periods from the 2d to the 4th and from the 8th to the 11th, the month in most places was without rain. There was a period of from 15 to 20 days without rain in the central counties. The month was quite unlike December, 1909, which was one of frequent and heavy rains. The average rainfall for December is 4.14 inches. Last year this amount was exceeded by 70 per cent, while during the present year there was a deficiency of more than 50 per cent. Last year there were heavy frosts at frequent intervals; this year there were less than the usual number and for the most part the frosts were light. The mean temperature was 1.6° above the normal and was the highest mean in three years. A well marked Föhn effect was noticeable in the section south of the Sierra Madre during the last week of the year, the afternoon temperatures rising above the 70° mark, due to the passage of air from the north over the range. Night temperatures were low, owing to rapid radiation through the clear, dry air. An average rate of fall at such times is from about 76° at 3 p. m. to 32° at 7 a. m.

The month began with a promise of rain in the central and northern counties, and by the 3d rain had fallen over the entire section north of the Tehachapi. A quick return to dry weather conditions followed, with heavy frosts in the Sacramento Valley and much tule fog in the San Joaquin. The second rainy period began about the 6th and resulted in unsettled weather with light rain in the northern and central counties until the 9th. A peculiar condition began on the morning of the 10th. An area of high pressure passing rapidly eastward over Oregon caused rain from Fresno north, notwithstanding the winds were north or northeast. The rain preceded a small disturbance which appeared off the northern coast of California, and continued during the passage of this depression across the State, ending December 12. This was during the prevalence of an area of high pressure that practically extended from the Atlantic to the Pacific. Ordinarily such a pressure distribution means fair, dry weather, with northerly winds. The cause of the rain on December 9 to 11 is not easily explained.

From the middle of the month to the close the weather of the Pacific slope was practically controlled by an area of high pressure extending from the Valley of the Colorado northwestward to British Columbia. A small disturbance formed on the 20th southwest of the high, and rain fell in the southern counties for a period of 36 hours. Fine weather prevailed during the holiday season, with clear days, warm afternoons, and moderately cool nights.

**TEMPERATURE.**

The mean temperature for the State was 1.6° above the normal. The following table gives the mean temperature for California during the time for which such records have been kept:

Year.	Mean.	Departure.	Year.	Mean.	Departure.
	<sup>° F.</sup>	<sup>° F.</sup>		<sup>° F.</sup>	<sup>° F.</sup>
1897.....	44.4	-1.8	1904.....	47.2	+1.0
1898.....	44.4	-1.8	1905.....	45.3	-0.9
1899.....	45.8	-0.4	1906.....	47.3	+1.1
1900.....	47.3	+1.1	1907.....	48.3	+2.1
1901.....	47.4	+1.2	1908.....	43.2	-3.0
1902.....	46.6	+0.4	1909.....	43.3	-2.9
1903.....	48.0	+1.8	1910.....	47.8	+1.6

The highest mean temperature was 59.8° at Los Angeles and the lowest mean 26.8° at Tamarack, Alpine County. The highest temperature was 87°, which occurred at San Bernardino on the 2d, Barstow on the 3d, and Ojai on the 5th. The lowest temperature was 3°, which occurred at Tamarack, Alpine County, on the 28th. The lowest temperatures of the present December are far above those of last year, as shown by the following figures: Tamarack, -24° and Beckwith, -17° on the 4th and 6th, respectively, of December, 1909.

**PRECIPITATION.**

The average monthly precipitation for the State was 1.87 inch, or 2.27 inches below the normal. There was therefore a marked deficiency. The dry condition appears to have been part of a long dry spell extending back to the middle of last spring, and referred to further on in connection with the snowfall reports. The distribution of the rain geographically was good and the southern counties received their full share. In at least one of the disturbances the rainfall was heavier in the south than in the north. The greatest monthly rainfall was 8.98 inches at La Porte. At 11 stations no rain fell. These were chiefly in the southeast and in the Salinas Valley.

The average monthly precipitation for California in December has been as follows:

Year.	Amount.	Departure.	Year.	Amount.	Departure.
	Inch.	Inch.		Inch.	Inch.
1897.....	1.75	-2.39	1904.....	3.04	-1.10
1898.....	1.20	-2.94	1905.....	1.55	-2.59
1899.....	3.03	-1.11	1906.....	8.42	+4.28
1900.....	1.68	-2.46	1907.....	5.41	+1.27
1901.....	1.45	-2.69	1908.....	2.33	-1.81
1902.....	2.96	-1.18	1909.....	6.92	+2.78
1903.....	1.44	-2.70	1910.....	1.87	-2.27

**SNOWFALL.**

December was a month of very light snowfall in the mountains of California. Probably not since records have been kept has there been so little snow on the ground at the close of the year. The ground was bare and without the usual snow cover at even comparatively high elevations. At Summit, Placer County, for example, where records have been kept for many years, the total fall for the month amounted to 33 inches, of which there remained on the ground only 4 inches. The average depth at the end of December is about 35 inches. During December, 1909, 83 inches fell, of which there remained on the ground at the close of the month 45 inches. The cause of the light snowfall was the continued existence of light north, northeast, and east winds, all of which are dry winds. The year closed with less water in the form of packed snow on the mountain ranges than has ever been known since the State was settled, except possibly during the month of December, 1876. Records, however, are meager for that period. The run-off was probably the lightest for any December.

The following extract from the last snowfall report published in the spring of the year is worth recalling:

The snowfall during the month of April was lighter than in any April in the past 9 years during which time snowfall records have been kept. It was possibly the lightest snowfall since the country has been settled. The month was practically without snow.

It seems therefore reasonable to conclude that the present dry spell is a continuation of a long period of deficient precipitation, the causes of which are still operative.



The following reports show the amount of snow at different points in the State:

## SISKIYOU COUNTY.

*McCloud*.—Two and one-half inches fell; none remaining on the ground.  
*Sisson*.—One-half inch fell; none remaining on the ground.  
*Gitta*.—One inch fell; none remaining on the ground.

## HUMBOLDT COUNTY.

*Bluff Creek Ranch*.—On the summit 2 miles away the snow is not over 4 inches deep. No snow on south slope.

## MODOC COUNTY.

*Alturas*.—One-half inch fell; none remaining on the ground.  
*Cedarville*.—One-half inch fell; none remaining on the ground.

## LASSEN COUNTY.

*Long Valley*.—Four inches fell; none remaining on the ground.  
*Madeline*.—Six and one-half inches fell; none remaining on the ground.  
*Eagle Lake*.—Two inches fell; none remaining on the ground.

## PLUMAS COUNTY.

*Clover Valley*.—Seven inches fell; 3 inches on ground at end of month.  
*Greenville*.—Trace fell; none on ground at end of the month.  
*Butte Valley*.—One inch fell; none on ground at end of month.  
*La Porte*.—Three inches fell.  
*Quincy*.—No snow fell.

## SIERRA COUNTY.

*Dorsey's*.—Thirteen inches fell; 3 inches on ground at end of month.  
*Sierra City*.—No snow fell.  
*Sierraville*.—Three inches fell; none on ground at end of month.  
*Table Rock*.—Three inches fell.

## NEVADA COUNTY.

*Bear Valley*.—No snow fell.  
*Fordyce Dam*.—Ten inches fell; none remaining on the ground.

## PLACER COUNTY.

*Summit*.—Thirty-three inches fell; 4 inches remaining on the ground.  
*Emigrant Gap*.—No snow fell.  
*Blue Canyon*.—No snow fell.  
*Tamarack*.—Seven inches fell; none remaining on the ground.

## ALPINE COUNTY.

*Tamarack*.—Sixty-two inches fell; 24 inches remaining on the ground.

## INYO COUNTY.

*Bishop Creek Gold Mine*.—Thirty-four and one-half inches fell; 14 inches remaining on the ground.

## SOUTHERN SIERRA.

*Summerdale (Mariposa County)*.—No snow fell. No snow in sight, except on the highest mountains.  
*Bear Valley (Kern County)*.—Two inches fell; none remaining on the ground.

## SOUTHERN CALIFORNIA.

*Fredalba (San Bernardino County)*.—Seven and one-half inches fell; none remaining on the ground.  
*Holcomb (San Bernardino County)*.—Six inches fell; none remaining on the ground.  
*Idyllwild (Riverside County)*.—One inch fell; none remaining on the ground.

## SUNSHINE.

The following table gives the total hours of sunshine and percentages of possible.

Stations	Hours.	Percentage of possible.	Stations	Hours.	Percentage of possible.
Eureka.....	92	32	Sacramento.....	102	35
Fresno.....	120	40	San Diego.....	236	76
Los Angeles.....	225	73	San Francisco.....	149	50
Mount Tamalpais.....	130	44	San Jose.....	157	52
Red Bluff.....	162	56	San Luis Obispo.....	143	47

## EARTHQUAKES.

The following earthquakes were registered at the Observatory of Santa Clara College, the Rev. J. S. Ricard, S. J., Director:

December 3, 6:07 a. m., period 1.2 second; minor tremors the entire day.  
 December 5, 12:24:26 p. m., disturbance southeast; minor tremors during the day. December 10, 1:39:12 a. m.; many small tremors followed.  
 December 12, 9:28 a. m. December 13, 4:41 p. m., period 20 seconds; occasional traces during the day. December 16, 7:05 a. m., mere trace, period 20 seconds. December 19, 5 a. m., period 1 second; origin of disturbance 81.62 kilometers southeast; one faint shock felt. December 28, 9:31 a. m., period 1.5 second; in all, 3 records; disturbance northeast. December 31, 4:11 a. m., periods 1.5 second, 1 second, and 0.75 second; 3 shocks felt; movement from northwest; distance from origin, 125 kilometers.

The last earthquake was the 29th disturbance recorded since the instruments were installed, about the beginning of June, 1910.

Earthquakes were reported at San Diego on December 3 at 6:07 a. m.; shocks lasted 2 or 3 seconds, but were not severe enough to crack plaster. The Official in Charge of the Weather Bureau at San Diego gives the time as 6:04:20 a. m. to 6:04:24 a. m. The office clock stopped.

At Eureka a light earthquake shock was felt at 11:20 p. m., December 12.

At San Francisco a moderate shock was felt at 4:12:14 a. m., consisting of 4 or 5 vibrations.

At Lick Observatory, Mount Hamilton, Doctor Campbell reports the following: December 12, earthquake of intensity III. At 9:28 a. m., two distinct jolts a second or two apart. December 15, 7:28:05, shocks similar to that of December 12. December 19, at 5:05:53 a. m., intensity II. December 31, 4:11:25 a. m., intensity III; shock lasted 10 or 12 seconds; vibrations gentle and rocking, increasing in intensity.

At Los Gatos, Mr. Irving H. Snyder reports a light earthquake shock at 4:11:10 a. m., December 31; motion rather slow, but awakened most sleepers; duration from 10 to 15 seconds. A light tremor occurred in the forenoon.

## THUNDERSTORMS.

A severe thunderstorm occurred at Santa Barbara December 19, from 4 to 6 p. m., accompanied by hail and heavy rain.

## MISCELLANEOUS.

On Monday, December 27, at Los Angeles, Arch Hoxsey, in a Wright biplane reached an altitude of 11,474 feet, the world's record for altitude. The wind was blowing from the north at an estimated average velocity of 20 to 30 miles, and the aviator reported that he traveled 15 or 20 miles in a most biting wind. When about a mile out over the ocean the wind was about the same, and the temperature, if anything, lower. The trip against the wind was made slowly. It required 46 minutes to go from Redondo to Venice. The aviator's hands and feet were numb. He continued to circle and make altitude, but on account of the low temperature had to descend.

Mr. Hoxsey was killed a few days later.

## NOTES ON THE RIVERS OF THE SACRAMENTO AND SAN JOAQUIN VALLEYS FOR DECEMBER, 1910.

*Sacramento watershed*.—At the beginning of the month all streams in this watershed were unusually low for the season. General rains during the first decade of the month resulted in substantial rises in all of the main rivers and an increase in the run-off of the smaller water courses between the 10th and 13th. By the 15th, however, a general fall was in progress, and by the close of the month the rivers were as low and, in many cases, lower than they were at the beginning. In the mountain streams there was a decided shortage of water after the 15th, due, not only to the small amount of snow on the high ranges, but to the fact that there was no snow upon the ground below the 5,000-foot level at any time during the month.

*San Joaquin watershed*.—The rivers of this watershed responded slightly to the rains which, in point of occurrence,



were practically coincident with those of the Sacramento watershed, but by the close of the month all streams had receded to the extreme low-water stages.—*N. R. Taylor, Local Forecaster.*

The following article was published in the *Pacific Rural Press*, December 24, 1910, by courtesy of the Chief of the Weather Bureau.

#### EXPERIMENTS IN FROST PROTECTION.

By Prof. ALEXANDER G. MCADIE.

In the *Monthly Weather Review* for June, 1909, page 224, in a short article upon "Frost damage prevented by the use of covers," there is given a discussion of the question frequently asked by fruit growers whether the heat or the smoke developed by fires and smudges of various frost-fighting devices now in general use prevents the injury, and which is the more efficient and economical, other things being equal.

Frost fighting by means of coal baskets, oil burners, orchard heaters, and various other types of fuel burners, has been practiced in California for 15 years with marked success. Indeed, it may be said that all of the modern methods of frost fighting had their origin in the cooperative work of the

is wasted—that is, it does not directly (and, if indirectly, only to a small degree) aid the fruit. The trouble is that the rate of conduction of heat through air is small, and, owing to ascensional currents, most of the heat is by convection carried to a level where there is nothing to protect. If we could establish horizontal currents at the desired level, the efficiency of the heating devices would be greatly increased. Therefore, it seems to us that none of the forms of heaters on the market at the present time do as effective work as they could be made to do if provided with auxiliary devices in the shape of fans or flues for directing and delivering heat to the spot where most needed.

As a result of considerable experimentation, we have come to the conclusion that open fires or fuel burned in wire baskets, in pots, or in stoves, whether wood, coal, oil (crude or distillate), as used on the ground, will not under severe conditions afford absolute protection, especially to young and tender vegetation. Of course, by doubling the number first usually employed, the degree of protection can be increased. In ordinary practice, however, where from 30 to 40 fires or pots per acre are used, a fall in temperature to 20° F. and a continuation of the low temperatures for 4 or 6 hours will not be offset by the heat provided. The oil pot is objectionable, too, unless the combustion is perfect, because there may be a deposit of soot upon the blossoms.

As stated in the *Monthly Weather Review*, June, 1909, the ideal method of frost protection would be a combination of a cover device and a heating device. Aside from its own value, the cover as an auxiliary to the heater permits of an economical use of fuel. By itself the cover, when properly placed, utilizes the earth's heat, which, after all is said and done, must remain the cheapest fuel possible. It is of course the sun's heat reemitted.

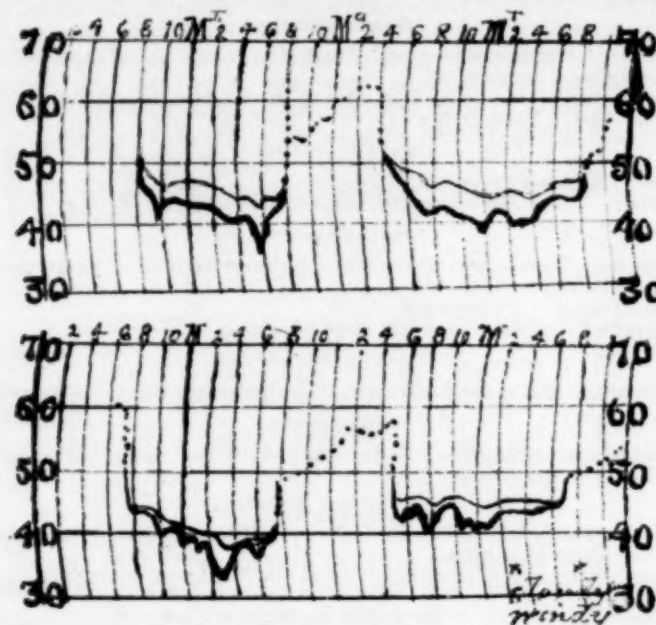


Antifrost cover made of prepared paper. Weight, 5 pounds; area covered, 60 square feet.

Weather Bureau and the fruit growers in California. In numerous publications issued by the Weather Bureau, the whole problem of protection has been so discussed and developed, both with regard to the general underlying principles and the special requirements of certain localities and individual crops, that vast good has been accomplished, and the interest taken in the work is now widespread and of national importance.

No one method can be laid down as universally the best; and it is plain that a device best suited for cranberries or garden truck may not be equally applicable for the protection of oranges. Nor will the method best suited for lemons necessarily be best for pears or apples. In the cranberry sections draining, clearing, and sanding are found to be the most efficient agencies. In the citrus fruit belts, heating devices and (where the fall in temperature is not too great) smudging devices are best. For the protection of vines and small fruits, nothing is as good as a cover. In each locality the grower must determine what method best suits his crop and locality.

In the present article the writer gives the result of some preliminary experiments made during the month of November, 1910, with antifrost cover. Following up the suggestion made in the *Monthly Weather Review* above quoted, also the line of argument given in the *Monthly Weather Review* for July, 1910, page 1107, it appears that a large amount of the heat used with oil pots, orchard heaters, coal baskets, and especially open fires,



Thermograms showing differences in temperature—Heavy line shows outside temperature.

The reemitted heat waves have a wave length from three to four times longer than the first waves. Therefore a suitable cover, preferably black, serves to prevent the escape of the heat into space and there is a further reemission. This second-hand sun heat is, as we may express it, trapped and held where needed. By conserving this heat we use the very cheapest heat energy that can be obtained, notwithstanding that the initial cost of the cover may be considerable. It also furnishes the additional protection of screening or shielding the chilled fruit or vegetable tissue from sudden warming. Of course, the condition of the plant is all important. A tree that is backward or not in a tender condition will go through a temperature change uninjured which would seriously affect another tree in a more sensitive condition. It has been shown in various papers that the exposure to the sun's rays in the morning is of great importance and that the rise in temperature following the fall must be guarded against. The cover lets us do this better than any other device.

The illustration herewith shows a new form of cover as used in the protection of deciduous fruit trees. It is also suitable for the protection of citrus fruit trees, and, in somewhat modified form, affords a certain protection for vines, garden truck, flowers, and ground crops. The cover consists of a reasonably cheap and light-weight material, yet sufficiently tough to withstand out-of-door exposure, and is rainproof. It is essentially a paper cover, and the principle, indeed, is the same as used by many housekeepers and gardeners to protect favorite plants, namely, by covering them with newspapers or cloths. The waterproof paper used is of various makes, but in the illustration shown was of the kind known commercially as "Keepdry." The material can be made in double sheets with an intervening air space, which gives a very high



degree of protection. For ordinary use a single layer will suffice. In the illustration the cover used weighed 5 pounds and protected a surface of 60 square feet, which area could be extended to 80 square feet. The covers can be made in any size. There is a small central frame of wood, cross braced, to which the paper is tacked. From the central frame flaps of the cloth paper extend, and there are suitable lacing strings provided to bring the ends of the flaps together and also to fasten the cover edges to the tree trunk, so that the cover remains in place should wind arise during the night hours.

The thermograms herewith show the difference in temperature during nights when frosts occurred, on the inner and outer side of the cover. The records were obtained by two similar thermographs and show that on an average there is a gain of 4° F. even where no special effort is made to wrap the tree closely. Nor was the cover placed in position until 8 p. m., when of course there had been a considerable loss of heat, except on November 19, when the cover was in place a little before 5 p. m.

Prof. E. J. Wickson makes the following editorial comment on the above paper:

Mr. McAdie is going back to test out the practicability of saving sun heat enough by checking radiation, which was perhaps the earliest horticultural recourse, and was employed, as he says in his essay, before men thought of the possibility of heating all out of doors. It is exceedingly desirable to have this thing accurately measured as Professor McAdie is doing it. Readers will doubtless be surprised that so much heat can be saved by such a slack shelter. Our correspondent who asked recently whether he could cover the orange trees nearly as tightly as they do for fumigation without injury to the tree, may take from Professor McAdie's demonstration the hint that it is not at all necessary to muffle his trees so closely to hold the temperature up enough degrees to avert frost. If the proposition works out as well as the preliminary experiments promise, there will remain, of course, much to be done in the way of contriving covers which will be in themselves cheap and cheap also in their handling. In this line the California inventive genius may be expected to work as great triumphs as it has in other phases of fruit protection. While the matter is still in its experimental stage, many of our readers may like to undertake experiments with various covers and give us their results for publication.

#### FOG AND FROST IN THE SAN GABRIEL VALLEY.

By ALEXANDER G. MCADIE.

One of the most important districts in California is that lying immediately south of the Sierra Madre and sometimes known as the Great Valley of southern California. Extending from the Pacific Ocean, in the vicinity of San Pedro Bay, eastward a distance of more than 60 miles to the foothills of the San Bernardino Range, it embraces an area particularly well suited for citrus fruit growing. The land is gently rolling for the most part, but traversed by the Puente Hills and the Santa Ana Mountains, running in a northwest-southeast direction. The San Gabriel Mountains lie to the north and rise somewhat abruptly to elevations exceeding 5,000 feet. Some of the best known peaks, such as Mount Lowe, Mount Wilson, 5,800 feet, and San Antonio, commonly known as old Baldy, 10,080 feet, can be seen from elevated places in the valley. On the eastern side the area is bounded by the San Bernardino Mountains, with an average elevation exceeding 6,000 feet. Some of the best known peaks in this range are San Bernardino, 10,630 feet, and San Geronimo, 11,485 feet. There are numerous cities and towns in the district, including Los Angeles and its various suburbs, also Pasadena, Alhambra, Sierra Madre, Monrovia, Azusa, Glendora, San Dimas, Covina, Lordsburg, Pomona, Ontario, Chino, Corona, Riverside, Redlands, and San Bernardino.

The southern half of the whole district is drained by the Santa Ana River, which has its source in the San Bernardino Mountains, traversing San Bernardino Valley and breaking through the Santa Ana Mountains between Rincon and Yorba, after which it is diverted for irrigation in the comparatively level lowlands around Orange, Santa Ana, Anaheim and Fullerton. The northern portion is drained by the San Gabriel River, which rises near the backbone of the Sierra Madre and flows westerly through various canyons, reaching lower levels near Azusa. It then flows southerly through the San Gabriel Valley and the Los Angeles Valley, emptying into the Pacific Ocean in a delta east of Long

Beach. A third stream is the Los Angeles River, formed by a number of small creeks uniting east of Los Angeles and entering the Pacific west of Long Beach.

It is thus plain that the topography favors a drainage of the air from the mountains seaward at certain hours and a return flood, or movement of the surface air from the sea inland at certain other hours. In other words, the conditions are extremely favorable for the development of air streams which reverse their direction at least twice in each 24-hour period.

In general the lower air flows to the southwest during the night and early morning hours and to the northeast during the afternoon hours. During the winter months when areas of high pressure pass over the Great Basin, the surface air apparently moves south crossing the northern flank of the Sierra Madre and descending with some momentum into the Great Valley. The wind movement is particularly marked in the vicinity of the mountain passes, a good illustration being near Cajon Pass, 3,823 feet. During these so-called "northers," also locally known as Santa Anas, the temperature rises and the humidity falls. The existence of a low pressure area south of the Valley of the Colorado seems to intensify the condition. Heavy frosts occur as a rule after a period of boisterous north wind; and are undoubtedly traceable to the displacement of the warm air of the valley by air that is not quite so warm, but remarkably dry and comparatively free from dust. During the stillness of the morning hours and before the return flow of air from the sea can be effective, the soil, which in places consists principally of river wash, coarse sand, and gravel, or else a light sandy loam, loses heat rapidly by radiation through the dust-free dry air; and it is not unusual on January mornings to have temperatures of about 26° F. in the orange orchards. At many points, especially in the lower lands, care must be taken to protect oranges and lemons from both the fall in temperature and the rather rapid rise which occurs about 8 o'clock in the morning. In various papers published by the Weather Bureau the best methods of protecting fruits have been discussed.

On November 26, 1910, the general conditions of pressure temperature and humidity were somewhat as above described, although not as pronounced as those likely to prevail later in the season. The accompanying photograph, "Fog in the San Gabriel Valley," showing conditions about 8 a. m. is reproduced through the courtesy of Director Hale of the Solar Physics Observatory on Mount Wilson, Cal. The photograph with many others was made by Prof. Ferdinand Ellerman of the Observatory, who states that the fog enveloped the mountain about half an hour after the photograph was taken. The view is looking south and the line of fog close to the ground passes over the Arcadia race track. The Puente Hills project above the blanket of fog beyond. The temperature near the Snow telescope was 38.1°. The temperature at Los Angeles at 5 a. m. was 46°, the wind northeast and frost was reported.

The photograph in addition to being one of the most beautiful of fog pictures, is of extreme interest as showing the condensation of the water vapor at various levels, from the ground to 2,000 meters. Attention is called to the sharply marked plane of condensation of the line of cumuli clouds at the top of the picture. The main blanket of fog lies rather close to the ground, averaging about 200 meters for the upper surface. The fog in the foreground, over the orange grove, shows stream lines in the lower air.

The photograph clearly shows the existence of air currents at different levels and the mixing of the same. While we lack accurate records of temperature and water content of the air at various levels, it is something to be able to look down upon the condensed vapor and have a permanent picture of the process of cloud condensation in the free air at critical times.



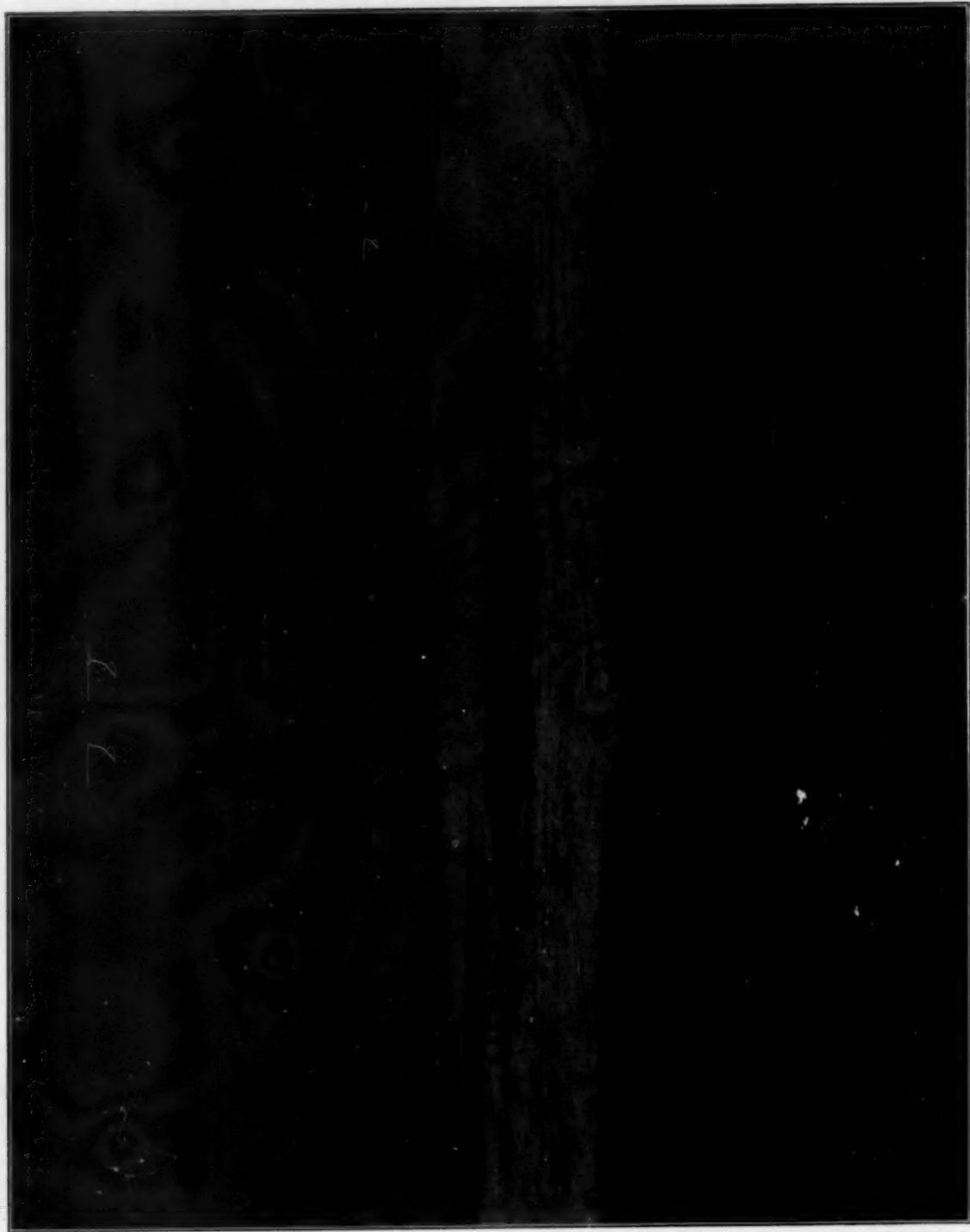


FIG. 1.—FOG IN THE SAN GABRIEL VALLEY, CAL., NOVEMBER 26, 1910, AS SEEN FROM THE SUMMIT OF MOUNT WILSON. BY DR. F. ELLERMAN.



TABLE 1.—Climatological data for December, 1910. District No. 11, California.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
Oregon.																				
Klamath Agency	Klamath	4,169	2	28.0		49	7	8	28	40	0.38		0.25	3.5	3	7	14	10	nw.	Edson C. Watson.
Klamath Falls	do.	4,250	19	32.4	0.0	50	1	14	27	24	1.19	-0.82	0.37	1.0	7	9	9	13	nw.	W. H. Heileman.
Lakeview	Lake	4,825	25																	Geo. L. Wharton, jr.
Merrill	Klamath	4,070	5	33.6		50	6	15	26	29	2.30		1.20	T.	4	12	7	12		Mrs. Agnes Ritchson.
Yenna	do.	4,146	3	32.4		51	15	7	28	34	1.86		0.40	0.5	8	7	15	9	s.	Jacob Rueck.
California.																				
Alameda	Alameda		1	50.8		64	24	34	28		0.20		0.15	0.0	4	13	12	6	w.	Chas. E. Sears.
Alturas	Modoc	4,460	6	35.1		61	1	13	28	34	2.25		0.93	0.5	8	10	11	10	nw.	Prof. C. B. Towle.
Angiola	Tulare	208	10	37.4	-7.8	55	23	23	30	24	0.60	+0.20	0.25	0.0	3	14	1	16	nw.	Santa Fe Co.
Antioch	Contra Costa	46	31	50.5	+2.2	70	2	32	16		2.02	-0.52	1.00	0.0	4	20	0	11		Southern Pacific Co.
Aptos	Santa Cruz	102	25	49.8	+0.1	69	9	30	26		1.85	-3.40	1.12	0.0	3	18	1	12	nw.	Do.
Arrowhead Springs	San Bernardino	2,000	1																	G. I. Royce.
Auburn	Placer	1,360	39	47.6	+0.6	68	19	29	31	28	3.30	-2.77	1.75	0.0	5	20	1	10	ne.	Southern Pacific Co.
Avalon	Los Angeles		7	57.8		74	5	45	28	30	2.14		0.95	0.0	3	24	6	1		T. S. Manning.
Azusa	do.	540	8	57.8		88	3	30	29	46	0.25	-1.29	0.25	0.0	1	22	5	1	sw.	A. P. Griffith.
Bagdad	San Bernardino	784	7	56.2		74	1	35	27	32	0.00		0.00	0.0	0					Santa Fe Co.
Bakersfield	Kern	404	21	48.4	+0.2	69	12	30	29	30	0.54	-0.26	0.24	0.0	4	23	1	7		Do.
Barstow	San Bernardino	2,105	7	51.2		87	3	23	29	50	0.04	-0.60	0.04	0.0	1	29	0	2	w.	E. L. White.
Berkeley	Alameda	317	23	50.4	+1.5	64	18	38	28	18	1.80	-2.99	1.26	0.0	3	15	9	7	n.	State University.
Biggs	Butte	98	11	56.6	+12.2	69	17	39	30		1.67	-1.53	0.95	0.0	5	12	3	15		Southern Pacific Co.
Bishop	Inyo	4,450	15	41.0	+0.7	66	7	13	29	39	0.30	+0.04	0.11	T.	3	19	5	7		W. A. Chalfant.
Blackburg	Humboldt	1,700	4	45.6		62	17	26	31	30	5.00		1.65	0.0	12	3	8	20	se.	Victor Hope.
Blue Canon	Placer	4,695	11	44.2	+2.9	68	7	18	5	37	6.85	-2.50	2.10	0.0	7	19	0	12	n.	Southern Pacific Co.
Blythe	Riverside		1																	M. L. Willis.
Branscomb	Mendocino	2,000	10	46.4		71	18	27	28	39	5.63	-6.93	2.27	0.0	10	15	7	9	n.	A. J. Haun.
Brawley	Imperial	-105	1	55.4		81	4	28	31	41	0.00		0.00	0.0	0					M. D. Witter.
Brush Creek	Butte	2,140	6	44.0		78	13	22	28	48	4.31		2.20	0.0	5	19	0	12	s.	Cal. Gas & Electric Co.
Calxico	Imperial	0	5	56.2		78	3	35	24	32	0.00		0.00	0.0	0	25	4	2	nw.	J. E. Peck.
Caliente	Kern	1,290	34	50.0	+0.3	69	9	38	28		0.36	-1.65	0.16	0.0	3					Southern Pacific Co.
Calistoga	Napa	363	38	50.1	+0.9	76	14	24	27		2.32	-4.11	0.99	0.0	4	18	0	13	s.	Do.
Campbell	Santa Clara	217	13	47.6	+0.7	68	1	26	31	38	0.69	-1.15	0.34	0.0	4	9	9	13	nw.	F. M. Righter.
Camptonville (near)	Yuba	3,500	3	46.8		68	1	26	31	32	5.68		2.30	0.0	8	17	4	10		Cal. Gas & Electric Co.
Cedarville	Modoc	4,675	16	34.9	+4.7	65	8	16	26	31	2.75	+0.88	0.72	0.5	7	17	11	3	nw.	T. H. Johnstone.
Chico	Butte	189	40	48.0	+0.5	71	19	26	31	30	1.77	-2.45	0.80	0.0	7	18	1	12	n.	G. H. Stephenson.
China Flat	Humboldt	600	1	46.6		61	11	26	26	24	4.62		1.32	0.0	11	10	11	10	s.	O. I. Westerburg.
Chino	San Bernardino	714	18	51.5	-0.7	75	1	30	31		0.38	-1.80	0.38	0.0	1	18	0	13	se.	Southern Pacific Co.
Cisco	Placer	5,939	39	38.2	+4.8	49	16	20	4		5.90	-2.60	2.20	1.0	6	16	1	14		Do.
Claremont	Los Angeles	1,200	18	56.4	+4.8	85	2	34	31	37	0.30	-1.85	0.27	0.0	3	18	7	6	w.	F. P. Brackett.
Cloverdale	Sonoma	340	8	51.4		77	22	28	31	40	1.66		1.15	0.0	3	24	1	6	n.	Lloyd Browne.
Colfax	Placer	2,421	39	46.2	-0.4	69	2	25	31	39	5.35	-3.33	2.31	0.0	6	18	0	13	n.	Southern Pacific Co.
Colusa	Colusa	60	7																	"The Sun."
Corning	Tehama	277	24	50.6	+3.3	70	2	32	22		1.34	-2.65	0.50	0.0	5	16	3	12	n.	Southern Pacific Co.
Cuyamaca	San Diego	4,677	11	44.4	+5.7	69	2	23	31	33	1.12	-4.30	0.79	1.5	3	8	17	6	e.	L. L. Macquarie.
Damant	Tulare	4,000	3	44.2		76	6	22	4	45	3.13		1.20	T.	5	12	15	4		D. L. Wishen.
Davisville	Yolo	51	38																	S. H. Beckett.
Deer Creek	Nevada	3,700	3	40.6		61	19	18	31	34	5.98		2.75	0.0	9	13	7	11	w.	Cal. Gas & Electric Co.
Delta	Shasta	1,138	25	47.5	+3.3	70	20	25	31	40	4.64	-6.34	1.62	0.0	7	16	0	15		Southern Pacific Co.
Denair	Stanislaus	126	10	47.6	+1.4	67	9	25	30	35	0.02	-1.22	0.01	0.0	2	17	0	14		Santa Fe Co.
Dobbins	Yuba	1,650	6	50.6		76	18	30	31	32	3.14		1.42	0.0	9	10	11	10	s.	Cal. Gas & Electric Co.
Dudleys	Mariposa	3,000	1	43.2		72	1	18	31	44	1.90		0.92	0.0	5	13	4	14	n.	W. H. Dudley.
Dunnigan	Yolo	65	33	54.5	+7.2	68	13	35	30		1.83	-2.00	1.19	0.0	4	13	6	12	n.	Southern Pacific Co.
Dunsmuir	Siskiyou	2,285	21	41.4	+1.7	61	15	27	20		1.97	-0.46	1.50	0.0	6	20	1	10	n.	Do.
Durham	Butte	160	15	46.8	+3.1	70	19	23	31	36	1.72	-2.96	0.84	0.0	3	16	5	10	s.	R. W. Durham.
El Cajon	San Diego	482	11	54.8	+0.2	83	9	29	29	47	0.33	-0.95	0.27	0.0	2	25	4	2	sw.	H. H. Kessler.
Electra	Amador	725	6	50.2		68	12	28	31	30	1.85		0.88	0.0	5	14	9	8		Cal. Gas & Electric Co.
Elmore	Riverside	1,234	15	52.1	-0.5	83	2	24	28	46	0.14	-1.78	0.14	0.0	1	23	6	2	w.	A. F. Schult.
Emigrant Gap	Placer	5,230	36	40.6	+3.7	60	7	22	2	34	6.48	-2.66	2.08	0.0	5	16	1	14		Southern Pacific Co.
Escondido	San Diego	657	16	53.0	+3.5	82	1	26	30	31	0.20	-1.50	0.11	0.0	3	0	29	2	w.	A. R. Moon.
Eureka	Humboldt	64	24	49.2	+1.2	65	1	34	28	21	3.43	-3.85	1.07	0.0	16	4	10	17	n.	U. S. Weather Bureau.
Farmington	San Joaquin	111	31	48.6	+1.6	68	11	27	26		0.94	-1.83	0.30	0.0	5	16	9	6	se.	Southern Pacific Co.
Folsom	Sacramento	252	38	47.3	-0.3	66	17	29	31	32	3.32	-0.51	2.02	0.0	4	13	7	11	n.	F. O. Hutton.
Fordyce Dam	Nevada	6,500	15	32.8		45	1	12	31	23	6.66	-1.52	3.20	10.0	11	12	11	8	sw.	E. E. Roening.
Fouts Springs	Colusa	1,650	6																	A. J. Burgl.
Fresno	Fresno	293	23	48.9	+2.1	70	8	28	30	28	0.21	-1.29	0.12	0.0	4	6	9	16	nw.	U. S. Weather Bureau.
Fruto	Glenn	624	21	48.2	+0.4	69	19	28	31		1.07	-3.16	0.40	0.0	4	24	0	7	n.	Southern Pacific Co.
Galt	Sacramento	49	32	46.7	-2.0	75	11	26	31		1.55	-1.69	0.70	0.0	3	3	8	20		Do.
Georgetown	El Dorado	2,650	37	47.2	-1.3	69	1	26	31	29	5.25	-4.14	2.43	0.0	9	17	3	11	ne.	H. D. Jerrett.
Gilroy	Santa Clara																			



TABLE 1.—Climatological data for December, 1910. District No. 11—Continued.

Stations.	Counties.	Elevation.	Length of record, years.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.				Sky.				Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, all or more.	Number of clear days.		Number of partly cloudy days.	Number of cloudy days.	Prevailing wind direction.
California—Continued.																				
Los Angeles.	Los Angeles.	293	33	59.8	+ 4.5	83	5	42	31	30	0.07	- 3.91	0.04	0.0	2	12	15	4	U. S. Weather Bureau.	
Los Banos.	Merced.	121	23	52.3	+ 5.2	70	2	30	18	...	0.47	- 0.86	0.25	0.0	2	12	3	16	Southern Pacific Co.	
Los Gatos.	Santa Clara.	600	23	51.1	+ 2.3	68	1	34	31	25	1.73	- 4.74	0.83	0.0	5	18	8	5	F. H. McCullagh.	
Madocel.	Siskiyou.	4,258	3	31.2	...	49	4	9	26	32	0.90	...	0.48	0.0	3	8	4	19	B. V. L. Co.	
Madeline.	Lassen.	5,270	1	33.2	...	55	1	10	28	35	2.80	...	0.90	6.5	9	12	8	11	J. H. Williams.	
Magalia.	Butte.	2,321	6	49.1	- 4.7	72	8	24	28	39	2.63	...	1.02	0.0	5	22	5	4	Butte County R. R. Co.	
Mammoth Tank.	Imperial.	257	32	50.7	- 2.9	70	13	34	30	29	0.00	- 0.40	0.00	0.0	0	29	0	2	Southern Pacific Co.	
Marysville.	Yuba.	67	39	47.0	- 2.9	64	12	24	31	32	0.81	- 2.65	0.50	0.0	4	15	2	14	Do.	
Mecca.	Riverside.	-185	4	57.4	...	84	1	30	30	42	0.00	...	0.00	0.0	0	22	8	1	E. A. Palmer.	
Menlo Park.	San Mateo.	64	32	50.5	+ 1.5	64	12	34	39	...	1.25	- 2.10	0.50	0.0	3	12	0	19	Southern Pacific Co.	
Merced.	Merced.	173	36	47.4	- 0.9	66	11	31	30	32	0.50	- 1.20	0.25	0.0	4	13	0	18	Santa Fe Co.	
Mill Creek (1).	Amador.	...	3	44.8	...	62	1	26	28	24	4.47	...	1.81	0.0	7	12	9	10	Cal. Gas & Electric Co.	
Milton (near).	Calaveras.	660	19	49.2	+ 2.3	66	9	32	28	22	0.87	- 2.84	0.48	0.0	3	16	8	7	J. H. Southwick.	
Modesto.	Stanislaus.	90	38	50.4	+ 2.3	65	12	30	26	...	0.56	- 1.29	0.22	0.0	4	23	2	6	Southern Pacific Co.	
Mojave.	Kern.	2,751	33	51.5	+ 4.7	78	5	28	25	34	0.10	- 1.16	0.10	0.0	1	19	0	12	Do.	
Mokelumne Hill.	Calaveras.	1,550	17	48.8	+ 5.3	68	1	31	17	37	2.12	- 3.35	0.82	0.0	6	14	2	15	C. E. Prindle.	
Mono Ranch.	Ventura.	3,210	4	43.8	...	70	2	21	27	41	0.88	...	0.39	0.0	4	15	12	4	H. Lathrop.	
Montague.	Siskiyou.	2,450	22	33.6	- 4.5	62	1	10	26	40	1.49	- 0.22	0.48	0.0	7	5	10	16	I. E. Deboy.	
Monterey.	Monterey.	15	45	50.0	- 1.7	66	3	28	28	...	0.55	- 2.23	0.23	0.0	3	27	1	3	Southern Pacific Co.	
Monterey.	Kern.	4,500	11	50.2	- 1.5	74	8	28	29	32	1.79	- 0.23	0.75	0.0	6	17	8	6	John C. Knecht.	
Mount Tamalpais.	Marin.	2,375	11	47.7	+ 0.1	63	1	34	31	16	2.05	- 0.86	1.18	0.0	6	10	6	15	U. S. Weather Bureau.	
Napa City.	Napa.	20	33	47.1	+ 0.6	65	1	26	31	34	1.37	- 2.82	1.01	0.0	4	12	11	8	Thos. Hull.	
Napa (S. H.).	do.	60	32	48.6	+ 2.1	68	17	31	31	28	1.35	- 2.89	0.81	0.0	5	12	7	12	W. H. Martin.	
Needles.	San Bernardino.	377	18	57.3	+ 4.5	75	4	42	21	26	0.07	- 0.41	0.07	0.0	1	18	9	4	Santa Fe Co.	
Nellis.	San Diego.	5,350	1	44.8	...	71	1	11	18	50	1.25	...	0.63	1.5	4	23	0	8	T. O. Bailey.	
Nevada City.	Nevada.	2,580	18	44.4	+ 2.5	74	19	20	31	46	4.27	- 6.84	1.98	0.0	8	23	1	7	S. W. Marsh.	
Newcastle.	Placer.	970	17	50.2	+ 2.8	72	3	31	26	33	3.31	- 0.92	1.56	0.0	10	18	0	13	G. D. Kellogg.	
Newhall.	Los Angeles.	1,290	33	48.6	- 0.9	83	2	23	30	...	0.27	- 3.13	0.27	0.0	1	25	1	5	Southern Pacific Co.	
Newman.	Stanislaus.	91	21	54.8	+ 5.4	70	18	40	1	26	0.51	- 1.58	0.28	0.0	3	12	0	18	E. S. Wangerheim.	
Nimshew.	Butte.	2,500	6	45.4	...	66	19	23	30	36	3.90	...	1.38	0.0	9	...	...	...	Cal. Gas & Electric Co.	
North Bloomfield.	Nevada.	3,200	13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	W. G. Shaud.	
North Fork.	Madera.	3,000	6	46.8	...	78	3	23	31	40	2.06	...	0.85	0.0	5	4	20	7	C. H. Shinn.	
Oakdale.	Stanislaus.	156	16	47.9	+ 3.0	65	1	31	23	...	0.67	- 1.56	0.29	0.0	4	20	3	8	Southern Pacific Co.	
Oakland.	Alameda.	36	34	50.8	+ 1.6	63	9	37	28	22	2.00	- 2.25	1.23	0.0	9	10	11	10	Chabot Observatory.	
Oceanside.	San Diego.	...	...	54.4	...	70	16	38	27	26	0.37	...	0.28	0.0	3	22	9	0	H. D. Brodie.	
Ojai Valley.	Ventura.	900	4	55.2	...	87	5	27	27	48	0.35	...	0.18	0.0	3	21	7	3	W. H. Duncan.	
Orland.	Glenn.	254	28	48.8	+ 0.9	69	19	29	30	33	1.20	- 1.90	0.48	0.0	6	14	11	6	U. S. Reclamation Service.	
Orleans.	Humboldt.	520	7	49.2	...	70	12	28	26	34	5.35	...	1.28	0.0	12	13	6	12	Fred T. Hale.	
Oreville (near).	Butte.	250	26	48.2	- 0.6	72	18	27	31	35	1.77	- 3.02	0.80	0.0	5	12	4	15	E. D. Fairchild.	
Palermo.	do.	213	19	47.4	+ 2.2	71	18	25	31	35	1.65	- 1.77	1.05	0.0	2	10	9	12	Miss Hattie Boalt.	
Palm Springs.	Riverside.	584	21	56.4	+ 1.3	80	4	32	30	...	0.00	- 1.20	0.00	0.0	0	19	9	3	Southern Pacific Co.	
Pasadena.	Los Angeles.	827	20	55.7	+ 1.7	84	2	33	28	30	0.15	- 2.49	0.06	0.0	3	25	5	1	E. R. Serven.	
Paso Robles.	San Luis Obispo.	800	23	48.5	+ 2.9	78	2	16	30	45	0.62	- 2.37	0.32	0.0	4	19	4	8	Dr. F. W. Sawyer.	
Peschland.	Sonoma.	190	14	48.2	+ 0.9	74	8	27	26	35	1.98	- 3.12	1.45	0.0	8	15	10	6	F. H. Parnell.	
Penstock Camp.	Tuolumne.	3,750	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Tuolumne W. P. Co.	
Placerville.	El Dorado.	1,875	21	45.1	+ 3.1	66	8	22	31	36	4.30	- 3.53	2.32	0.0	7	18	6	7	A. Baring-Gould.	
Point Lobos.	San Francisco.	280	17	51.8	+ 2.4	65	18	42	18	25	1.73	- 1.20	0.66	0.0	4	14	5	12	John Hyslop.	
Point Reyes.	Marin.	490	18	52.2	+ 1.6	66	13	44	27	19	1.32	- 2.42	0.60	0.0	6	8	11	12	U. S. Weather Bureau.	
Porterville.	Tulare.	464	21	50.5	+ 2.0	73	7	29	30	32	1.03	- 0.59	0.50	0.0	5	15	8	8	Leslie McAuliff.	
Quincy.	Plumas.	3,400	15	40.2	+ 5.7	54	8	16	28	38	4.92	- 0.97	1.50	0.0	8	17	6	9	D. N. Rogers.	
Red Bluff.	Tehama.	307	33	49.2	+ 2.8	67	12	32	31	26	1.78	- 3.53	0.58	0.0	6	12	10	9	U. S. Weather Bureau.	
Redding.	Shasta.	532	35	48.9	+ 1.9	70	19	30	31	31	3.69	- 3.14	1.15	0.0	7	12	9	7	L. F. Bassett.	
Redlands.	San Bernardino.	1,352	17	54.8	+ 1.6	83	2	33	28	37	0.67	- 2.19	0.55	0.0	2	12	14	5	Paul W. Moore.	
Redley.	Fresno.	347	10	47.8	+ 1.9	68	8	30	30	30	0.36	- 0.25	0.25	0.0	2	12	10	9	Santa Fe Co.	
Rialto (near).	San Bernardino.	2,250	4	58.4	...	81	2	35	31	21	0.19	...	0.14	0.0	5	17	12	2	So. Cal. Edison Co.	
Riverside.	Riverside.	841	28	53.6	+ 0.2	80	1	28	31	44	0.04	- 1.70	0.02	0.0	3	24	4	3	C. W. Barton.	
Rocklin.	Placer.	249	39	51.4	+ 3.5	75	19	30	31	41	2.45	- 1.32	1.25	0.0	3	15	1	15	Southern Pacific Co.	
Rohnerville.	Humboldt.	75	7	49.2	...	67	2	30	26	24	3.53	...	1.00	0.0	9	6	16	9	Dr. R. Callihan.	
Sacramento (1).	Sacramento.	71	33	48.0	+ 1.7	66	18	32	30	28	1.62	- 0.89	0.0	6	8	4	19	se.	U. S. Weather Bureau.	
Sacramento (2).	do.	35	57	48.0	+ 1.0	65	18	29	31	30	2.08	- 2.04	1.03	0.0	8	13	4	12	nw.	S. H. Gerrish.
St. Helena.	Napa.	255	2	50.4	...	75	13	30	30	38	1.85	...	1.12	0.0	3	17	4	10	n.	Frank Kettlewell.
Salinas.	Monterey.	40	36	53.0	+ 2.9	83	13	28	31	40	0.61	- 1.74	0.35	0.0	5	26	2	3	w.	Miss F. Ruth Abbott.
San Bernardino.	San Bernardino.	1,054	18	54.6	+ 2.6	87	2	28	30	50	0.03	- 2.86	0.02	0.0	2	19	12	0	sw.	Dr. A. K. Johnson.
San Diego.	San Diego.	93	39	56.2	+															



TABLE 1—Climatological data for December, 1910. District No. 11—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
California—Continued.																				
Three Rivers	Tulare	870	.....	49.1	.....	72	1†	26	30	37	1.56	.....	0.73	0.0	6	11	13	7	sw.	E. D. Barton.
Towle	Placer	3,704	24	43.7	+ 1.4	75	1	22	31	38	5.68	- 1.96	2.20	0.0	5	21	0	10	sw.	Southern Pacific Co.
Tracy	San Joaquin	64	30	47.5	- 1.8	59	3†	32	30	.....	0.42	- 1.74	0.15	0.0	6	11	6	14	nw.	Do.
Ukiah	Mendocino	620	17	47.3	+ 2.6	66	18	24	26	36	1.80	- 4.97	1.32	0.0	7	11	7	13	nw.	Dr. Geo. McCowen.
Upland	San Bernardino	1,760	13	53.8	+ 0.4	80	9	30	31	36	0.23	- 1.28	0.21	0.0	2	15	7	9	w.	Chas. E. Harwood.
Upperlake	Lake	1,350	25	44.2	- 1.4	69	13	25	28	35	1.71	- 3.87	1.11	0.0	5	21	2	8	nw.	C. M. Hammond.
Vacaville	Solano	175	22	49.4	+ 1.8	67	1†	27	30†	36	1.80	- 4.08	0.80	0.0	5	14	9	8	n.	G. O. Coburn.
Valley Springs	Calaveras	673	21	50.1	+ 2.4	64	4	31	31	.....	1.34	- 2.93	0.39	0.0	5	11	12	8	w.	Southern Pacific Co.
Visalia	Tulare	834	22	54.9	+10.3	82	10	32	15†	44	0.71	- 0.99	0.50	0.0	2	19	10	2	nw.	Santa Fe Co.
Warner Springs	San Diego	3,165	2	52.0	.....	83	2	24	31	44	0.49	.....	0.45	0.0	3	27	3	1	.....	Mrs. F. S. Sanford.
Wasco	Wasco	336	10	41.9	- 3.1	74	2†	20	19†	50	0.70	+ 0.36	0.70	0.0	1	12	4	15	.....	Santa Fe Co.
Watsonville	Santa Cruz	23	14	51.0	- 0.3	77	9	26	31	38	1.44	- 2.65	0.62	0.0	4	12	14	5	sw.	Spreckels Sugar Co.
Westley	Stanislaus	90	21	47.9	- 1.4	68	1	27	30	.....	0.45	- 1.64	0.25	0.0	3	12	6	13	.....	Southern Pacific Co.
Wheatland	Yuba	84	23	46.6	+ 1.5	67	18	27	31	31	1.77	- 1.91	1.01	0.0	6	14	6	11	n.	Wm. Lombard.
Willows	Glenn	136	31	48.0	+ 0.8	69	19	26	31	29	1.18	- 2.08	0.60	0.0	6	17	2	12	n.	M. T. Harrington.
Yosemite	Mariposa	3,945	6	37.4	.....	58	9	15	27	39	1.66	.....	1.14	0.0	4	18	8	5	n.	J. P. Kelly.

- a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.  
 \* Precipitation included in that of the next measurement.  
 \*\* Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.  
 † Also on other dates.  
 ‡ Separate dates of falls not recorded.  
 § Data are from standard instruments not supplied by the U. S. Weather Bureau.  
 ¶ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.  
 // Estimated by observer.  
 | Precipitation for the 24 hours ending on the morning when it is measured.  
 T. Precipitation is less than 0.01 inch rain or melted snow.



1900

## MONTHLY WEATHER REVIEW.

DECEMBER, 1910

TABLE 2.—Daily precipitation for December, 1910. District No. 11, California.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Oregon.																																	
Klamath Agency.	Klamath.				.03													.10														.25	0.38
Klamath Falls.	do.			.27					.24	.18	.37	.01						.02										.10			T.		1.19
Lakeview.	Pitt.									.64	.82	.52																					3.03
Long Valley.	do.			.69					* .40	* .26	* .60	* .10						.18	T.						.06				.05		.07		2.30
Merrill.	Interior drainage	1.20																T.													T.		1.86
Yonna.	do.			.30					.40	.26	.60	.10						.10											.05		.05		
California.																																	
Aguanga.	Coast.																			.05	.11											0.16	
Alameda.	do.	.01	.03							.01	.15																						0.20
Alturas.	Sacramento			.33	.05				.33	.93	.32	.09						.19												T.		.01	2.25
Anderson.	do.																																
Angels Camp.	San Joaquin.			.86				.07		.18		1.03																					2.02
Angiola.	do.			.25																													0.60
Antioch.	do.			1.00																													2.02
Aptos.	Coast.			.28	.45																												1.85
Arrowhead Springs.	do.																																
Auburn.	Sacramento			.96	.46			.09		.04		1.75																					3.30
Avalon.	Ocean.																																1.14
Azusa.	Coast.																																0.25
Bagdad.	Desert.																																0.00
Bakersfield.	San Joaquin.			.21															.07	.02	.24											0.54	
Barstow.	Desert.			T.																													0.04
Bear River.	San Joaquin.																																7.90
Bear Valley (1).	Sacramento.	2.24	1.24				.10		2.06	.24	1.94							.08															1.79
Bear Valley (2).	San Joaquin.			.39																													1.16
Bear Valley Dam.	Coast.																		.96	.20												3.51	
Ben Lomond.	do.			1.17																													1.80
Berkeley.	do.			1.26				T.																									5.00
Big Bar.	Sacramento																																1.67
Biggs.	do.			.95	.10					.05	.15	.42																					0.30
Bishop.	Owens.			.11															.08														3.95
Bishop Creek.	do.			.50															.05	.90	.80	.40											5.00
Blackburg.	Coast.	.15	.32	1.17	.08			.15		1.66	.68	.35	.08					.19							.08				.10		.15		6.85
Blue Canyon.	Sacramento.			2.05	2.10																												
Blythe.	Desert.																																2.25
Boulder Creek.	Coast.			.38	.72			.07																									
Bowmans Dam.	Sacramento.																																
Branscomb.	Coast.	.12	.39	1.66			.10		2.27	.47	.24							.14											.04		.20		5.63
Brawley.	Desert.																																
Brush Creek.	Sacramento.			2.20					.25	.65	.85	.36																					4.31
Burney.	do.			.17	.55				.72	1.27	.46	.06						.11															3.34
Butte Creek House.	do.																																
Butte Valley.	do.			.13	1.52	.13			.98	.98	.73	.36						.18														.03	5.04
Calxico.	Desert.																																0.00
Caliente.	San Joaquin.			.06	.16										.14																		0.36
Callistoga.	Coast.			.99						.75	.18	.40																					2.32
Campbell.	do.			.10	.20		.05																										0.69
Campo.	do.																																0.15
Camptonville.	Sacramento.			.16	2.30	.45		.07		.13	.50	.81	1.26																				5.68
Cedarville.	Mountain lakes.			.39					.72	.71	.58	.22						.10	T.														2.75
Chester.	Sacramento.			.11	1.43	.16			.44	1.05	.76	.33						.06															4.34
Chico.	do.			.08	.80		.01		.06	.03	.41	.38																					1.77
Chico (near).	do.			1.04			T.		.11	T.	.68							.03															1.86
China Flat.	Coast.	.10	.08	.42					1.32	.73	.25							.39								.08			.06		.28	.31	4.62
Chino.	do.																																0.38
Cisco.	Sacramento.			1.50	2.20		.45											.10															5.90
Claremont.	Coast.																																0.30
Clear Lake.	Klamath.																																1.66
Cloverdale.	Coast.			1.15					.11	.40																							5.35
Colfax.	Sacramento.			2.00	.82			.06																									3.09
Colgate.	do.			1.02	.46			.06	.01	.05	.09	1.39						.01															1.34
Colusa.	do.																																0.44
Corning.	do.			.50	.16				.23	.25	.20																						1.72
Corona.	Coast.																	.15															4.45
Crocker.	San Joaquin.																																



## 10

10

10

10







TABLE 2.—Daily precipitation for December, 1910. District No. 11—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
California—Continued.																																		
Tustin (near)	Coast.											T.									.75	T.											0.75	
Ukiah.	do.		.10	1.32			.03		.12		.20						.02														.01		1.80	
Upland.	do.											.02								.21							T.						0.23	
Upper Lake.	do.			.11	1.11				.11		.33	.06																					1.71	
Upper Mattole.	do.	.57	1.59	.87		.02				.87	.52	.19	.18				.02	.15			T.	.01			.02				.22		.03	.14	.10	5.50
Vacaville.	Sacramento.		.80	.40			.06			.08	.46																						1.80	
Valley Springs.	San Joaquin.				.33	.39					.20	.36	.06																				1.34	
Ventura.	Coast.																																	
Visalia.	San Joaquin.										.50										.21												0.71	
Warner Springs.	Coast.																			.45	.02					.02							0.49	
Wasco.	San Joaquin.																				.70												0.70	
Watsonville.	Coast.		.26	.47							.62	.09																					1.44	
Weaverville.	Sacramento.		.12	.48	.12	.99			.33	1.01	.34																						3.39	
Weitchpec.	Klamath.	.20	.22	.67	.27	.04	.07	.02	1.76	.42	.18	.05						.54						.04	.10				.23		.33		7.14	
West Branch.	Sacramento.			.42	.03				1.15	.42	.93	.69						.02															5.41	
Westley.	San Joaquin.			.12		.08						.25																					0.45	
West Point.	do.		.70	.84				.12				1.79	T.								.04												3.49	
West Saticoy.	Coast.										.20										.10						.05						0.35	
Wheatland.	Sacramento.		.14	1.01		.04				.01	.42	.15					T.																1.77	
Willows.	do.		.08	.60		.01				.04	.41	.04																					1.18	
Woodlee.	do.																				T.													
Yosemite.	San Joaquin.			1.14			.01				.28	.23																					1.66	
Yucalpe.	Coast.																																	

75892-11-9



TABLE 3.—Maximum and minimum temperatures at selected stations, December, 1910. District No. 11, California.

Date.	Lakeview Oreg.	California.																									
		Alturas.		Bartow.		Brancomb.		Brawley.		Colusa.		Eureka.		Fresno.		Independence.		Los Angeles.		Mount Tamalpais.		Nevada City.		Porterville.		Red Bluff.	
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1		61	27	72	34	50	40	79	41			65	47	68	41			79	58	63	54	73	29	70	48	58	36
2		49	32	75	35	51	46	77	39			63	56	60	42			79	55	56	50	52	29	71	47	53	47
3		46	33	87	37	51	43	75	41			59	49	57	48			70	55	50	42	48	41	63	48	60	47
4		45	26	71	45	53	39	81	41			59	46	51	44			69	53	49	39	59	29	54	49	56	44
5		48	24	73	33	51	31	78	43			55	42	56	46			83	58	49	42	56	26	59	47	54	37
6		49	25	81	33	51	39	77	36			61	43	63	46			76	56	54	47	52	34	65	42	56	40
7		47	25	72	35	54	36	78	38			56	43	62	45			74	54	55	45	59	35	71	41	56	40
8		44	31	70	35	51	41	78	40			56	51	70	45			80	55	57	50	56	46	72	43	50	47
9		43	31	71	35	53	48	77	38			51	49	66	48			77	58	63	49	61	46	70	42	54	49
10		44	34	60	35	55	50	74	40			57	49	64	54			65	54	51	48	54	47	70	52	57	52
11		44	37	73	39	60	40	78	46			53	51	69	50			64	52	49	47	57	41	68	54	62	49
12		53	26	74	34	63	35	77	47			51	48	55	45			68	46	55	47	66	33	62	40	67	46
13		54	24	71	30	67	36	77	43			48	44	51	45			73	45	59	46	67	30	59	42	64	42
14		56	23	72	34	67	40	77	43			54	45	52	46			77	53	60	48	65	29	58	49	60	40
15		55	24	71	31	67	43	78	42			59	52	48	45			80	56	57	49	70	28	48	41	54	40
16		44	25	78	32	53	40	74	40			56	45	48	43			81	55	56	40	52	29	47	43	48	42
17		40	29	65	35	64	30	72	32			52	43	49	40			64	49	51	36	55	25	56	35	61	41
18		44	20	67	35	71	32	67	40			61	40	56	34			63	48	56	46	67	30	58	38	66	49
19		49	16	66	33	67	35	70	35			53	42	58	35			55	47	57	43	74	28	59	39	66	42
20		47	20	61	36	60	36	66	47			53	46	55	46			60	43	45	39	54	27	58	40	48	36
21		38	26	64	38	61	32	66	46			50	41	56	41			62	49	46	37	55	26	58	44	57	36
22		41	19	62	30	60	29	69	35			52	39	60	35			65	46	51	41	58	27	59	37	60	34
23		49	20	69	28	62	39	71	33			56	42	59	36			77	51	51	44	64	28	61	35	56	36
24		39	29	61	30	54	33	69	33			50	41	59	33			68	47	49	42	57	30	59	34	59	39
25		38	26	70	30	57	28	62	33			52	39	55	38			59	50	49	40	53	27	60	35	58	46
26		46	14	66	40	58	29	65	40			53	36	58	30			63	44	54	42	60	24	58	36	59	39
27		41	24	61	32	54	30	66	34			49	39	55	33			60	45	44	37	52	26	56	32	56	36
28		44	13	70	25	63	27	65	35			50	34	54	30			64	43	50	42	60	22	58	30	62	39
29		40	22	60	23	49	21	67	32			54	41	54	34			72	42	49	39	50	26	59	30	48	36
30		36	26	57	24	42	29	65	33			52	40	56	28			64	45	42	35	54	25	55	29	55	35
31		34	19	64	34	47	28	66	28			49	37	50	32			61	42	41	34	51	20	52	32	55	32
Means		45.4	24.8	68.8	33.5	57.0	35.8	72.3	38.5			54.5	43.9	57.2	40.6			69.4	50.1	52.2	43.2	58.4	30.4	60.5	40.5	57.3	41.1

Date.	California.																									
	Redlands.		Sacramento.		San Diego.		San Francisco.		San Jose.		San Luis Obispo.		Santa Barbara.		Santa Rosa.		Sierra.		Stockton.		Summit.		Susanville.		Yosemite.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	82	48	65	38	70	49	62	48	70	34	76	47	77	50	64	30	50	30	56	34	49	28	47	25	44	25
2	83	46	52	47	69	51	57	51	55	45	79	47	76	47	57	50	55	33	52	36	38	30	55	30	46	26
3	74	46	55	45	64	53	59	51	64	45	58	46	71	45	60	50	50	36	54	47	37	32	46	35	49	33
4	72	40	55	37	62	50	57	45	57	40	63	50	68	44	64	37	48	27	57	37	38	18	43	27	46	27
5	79	45	50	37	61	50	55	47	57	36	76	45	74	47	60	33	48	29	56	35	38	19	40	24	49	27
6	76	42	52	45	66	43	56	49	63	46	70	44	77	44	57	42	45	24	54	44	40	29	41	26	53	31
7	76	42	55	41	69	50	59	50	60	47	71	45	70	45	58	40	46	31	57	44	43	32	43	26	54	38
8	81	44	61	49	72	55	62	52	69	45	71	45	76	47	57	51	46	37	57	46	42	37	51	32	53	30
9	80	46	59	50	73	56	65	53	68	50	79	48	72	49	56	50	47	40	62	46	45	37	48	42	58	31
10	67	47	58	51	65	52	58	53	63	53	62	54	65	51	58	52	47	35	60	42	43	35	47	41	55	39
11	64	48	63	52	65	55	60	53	65	49	62	49	64	53	56	47	51	30	58	50	44	32	50	36	55	39
12	76	40	63	42	61	53	59	47	61	43	72	46	68	45	66	37	42	26	56	48	40	29	47	31	50	26
13	75	41	59	38	66	48	65	48	68	36	78	41	73	43	64	35	56	22	52	42	38	22	45	33	48	22
14	75	42	47	43	70	47	57	47	62	37	77	37	76	43	54	38	53	25	50	42	48	22	41	25	48	20
15	75	41	46	42	74	52	55	45	59	38	69	60	70	42	50	41	52	31	50	42	48	30	41	26	51	21
16	76	43	47	42	73	53	59	43	54	37	70	56	76	42	58	42	38	28	49	42	35	25	41	28	44	23
17	62	39	61	35	60	49	62	43	61	39	56	47	64	43	65	32	42	28	53	37	30	20	40	28	50	20
18	63	36	66	43	58	49	68	53	65	38	58	49	62	44	74	47	52	25	48	33	34	20	40	21	60	20
19	68	38	54	36	59	46	61	47	64	34	58	48	60	48	60	30	52	20	50	31	37	19	37	30	55	29
20	50	38	54	38	58	47	55	50	56	42	54	43	62	41	58	38	47	26	54	37	41	24	45	25	54	30
21	58	42	54	41	57	46	57	47	56	40	56	46	6													



**Climatological Data for December, 1910.**  
**DISTRICT No. 12, COLUMBIA VALLEY.**

EDWARD A. BEALS, District Editor.

**GENERAL SUMMARY.**

The month of December in this district was favorable for construction work, and the transportation companies suffered little interference from the elements, as there were no very heavy rains or high winds. There were no severe cold spells to injure fall-sown grain, and winter pasturage was much better than it was at the same time a year ago. The snowfall was less than usual in the valleys, and slightly below normal in the mountains.

**TEMPERATURE.**

The mean temperature, as determined from the records of 213 stations, was 36.5°, which is 1.8° above the district average. The mean temperatures ranged between 48.3° at Toledo, Oreg., and 14.7° at Ovando, Mont., elevation 4,207 feet, with a record for 26 days only. The warmest section was west of the Cascade Mountains, where temperatures averaged 41° and above. In the immediate valleys of the Columbia and its main tributaries mean temperatures of 30° to 40° obtained; and in the higher elevations, especially in western Montana, central and eastern Idaho, and western Wyoming, the mean temperatures were generally below 30°. At points in central and southwestern Oregon and western Wyoming, and in a few localities in central Washington, central-western Montana, and east-central Idaho, mean temperatures were below normal. In Washington, northern, northwestern, and southeastern Oregon, northwestern Montana, and western Idaho, the temperatures averaged considerably above normal, the greatest departure being +6.8° at Chesterfield and Idaho Falls, both in Idaho.

There were no marked warm or cold periods, the temperatures being remarkably uniform throughout the month. The highest recorded temperature was 65° at Fairview, Oreg., elevation 142 feet, on the 10th, and the lowest was -14° on the 26th at Afton and Bedford, both in Wyoming, at elevations of 6,200 feet and 5,900 feet, respectively.

**PRECIPITATION.**

The average precipitation, as determined from the records of 332 stations, was 3 inches, which is 1.39 inch below the average for the district.

The precipitation was quite well distributed throughout the first and third decades. During the second decade no measurable amounts occurred in western Montana, and, with the exception of the 15th and 16th, comparatively little precipitation occurred in Oregon and Washington. In Idaho and western Wyoming very little precipitation occurred from the 13th to the 20th, inclusive. The heaviest precipitation occurred west of the Cascade Mountains in Oregon and Washington, in the Blue Mountains in northeastern Oregon, and in central-western Montana and adjoining portions of northern Idaho. Except along Puget Sound in northwestern Washington, the precipitation was deficient in practically all portions of District No. 12. Excepting in Idaho, where considerable snow fell in the higher mountains, there was a comparatively light December snowfall throughout the district, and less than the usual amount remained on the ground at the close of the month, except in western Montana, where temperatures in the higher elevations were generally below the freezing point, and the heavy November snowfall remained on the ground augmented by the December fall.

The greatest monthly precipitation was 14.89 inches at Musick, Oreg., in the Umpqua drainage basin, and the least was a trace of precipitation at Willow Glen Stock Farm, Mont., in the Missoula Basin. The greatest 24-hour fall was 3.03 inches on the 23d at Bellingham, Wash., in the Puget Sound drainage area.

**THE RIVERS.**

The rivers in Oregon fell gradually throughout the month. In most cases the highest stage occurred from the 1st to the 5th and the lowest from the 26th to the 31st. The mean stages on the Willamette and Snake were higher than those for November, while on the Columbia they were uniformly lower.

The Columbia River averaged 4.4 feet which is 0.1 foot above the normal for the month, being 0.9 foot above at both The Dalles and Celilo. Compared with the November mean stage the average was 0.5 foot lower.

The Willamette River averaged 6.6 feet which is 0.5 foot below the December normal, being 0.7 foot below at Salem and 0.3 foot below at Portland. The highest stage reported was 20.5 feet at Wilsonville on the 2d.

The Snake River averaged 3.2 feet which is 0.6 foot above normal for December. The highest stage recorded was 5.5 feet at Riparia on the 6th, and the lowest 1.9 foot at Lewiston on the 24th.

Maj. J. F. McIndoe in charge of the river and harbor improvements for the second Portland District, states in his annual report that the Willamette River is now navigable for ordinary river boats to Harrisburg, 152 miles above Portland, while log rafts come from 184 miles up the stream. The McKenzie, Luckiamute, Santiam, and Yamhill Rivers furnish sufficient water to aid in getting out the great spring runs of saw timber. During the past season the river commerce of lumber, hay, grain, fruit, and produce amounted to 519,250 short tons, valued at \$9,295,384. This amount will be greatly increased when the proposed improvements are made at the Oregon City Locks. The State of Oregon has appropriated \$300,000 to be used in this work and the Government will expend a like amount. Through the construction of the jetties at the mouth of the Columbia River there is now an average depth of 25 feet of water over the bar for a width of 8,000 feet, and one principal channel shows an average of 26½ feet for a distance of 1,000 feet in width. It is estimated by the Government engineer that the value of traffic over the bar increased \$3,200,000 in 1910 over the same period of 1909 and \$13,000,000 over the traffic of 1904, when the first records were secured.

**MISCELLANEOUS PHENOMENA.**

Miscellaneous phenomena were recorded as follows: Hail: Portland, Oreg., on the 8th; Newport, Oreg., and Tatoosh Island, Wash., 30th; and Greenhorn, Oreg., 31st. Sleet: Boise, Idaho, on the 24th; Hermiston, Oreg., 22d; North Bend, Oreg., 30th; Wallowa, Oreg., 24th; and Tatoosh Island, Wash., 8th and 30th. Lunar halos: Greenhorn, Oreg., on the 9th; Summit, Oreg., 7th, 8th, and 14th; Tatoosh Island, Wash., 10th, 13th, and 14th; Port Crescent, Wash., 10th and 13th; Pocatello, Idaho, 15th; Seattle, Wash., 14th; Helena, Mont., 14th and 21st; and Portland, Oreg., 14th and 15th. Solar halos: Boise, Idaho, on the 4th and 6th; Helena, Mont., 5th; North Head, and Tatoosh Island, Wash., 14th.



Maximum wind velocities were recorded as follows: Tatoosh Island, Wash., 62 miles from the south on the 3d; North Head, Wash., 60 miles from the southeast on the 29th; Seattle, Wash., 33 miles from the south on the 29th; Portland, Oreg., 30 miles from the south on the 29th. The prevailing wind direction was southwest.

#### SNOW IN THE MOUNTAINS AND STAGE OF STREAMS.

The snowfall in the mountains was light as a rule, but nearly all of the heavy November fall remained on the ground, there having been practically no thawing weather at high elevations in the regions of heavy snowfall.

*Bitter Root drainage.*—There was a heavy November snowfall in the Bitter Root Mountains, very little of which melted at high altitudes during December, and at its close there was more than the usual amount on the ground. The streams were generally lower than usual during the month.

*Flathead drainage.*—The season's snowfall has been unusually light in the Cabinet and Kootenai Mountains, but as the ground is not frozen under the snow, a large percentage of the moisture will probably penetrate the soil when it melts in the spring. The flow of water in the streams was about normal during December.

*Kootenai drainage.*—There was nearly a normal snowfall in the Purcell and Cabinet Mountains in this drainage basin. The soil is well filled with moisture from the fall rains, and as a result the stream flow in December was about the same as usual.

*Missoula drainage.*—The snowfall was normal or above in the Bitter Root and Cœur d'Alene Mountains, but was deficient in the Main Range. There is but little frost in the ground under the snow, and the soil is in good condition to absorb the water from melting snow. A majority of the small streams carried less than the average flow of water, although a few were higher than usual.—*R. F. Young, Section Director, Helena, Mont.*

#### NOTES.

The board of Army engineers charged with the duty of investigating the various projects of the United States Reclamation Service has reported favorably on the Arrow Rock Dam of the Payette-Boise project, and work on this structure will be begun in a short time. The dam will be built at Arrow Rock, on the Boise River, 25 miles above Boise. It will be approximately 340 feet in height, being one of the highest dams yet built by the Reclamation Service. It will contain about 400,000 cubic yards of masonry, and will store approximately 200,000 acre-feet of water. A power plant will be constructed at the present diversion dam of the project, 8 miles above Boise, for the purpose of developing power to be used in building the dam. A railroad will be constructed from Barberton to the dam site, to be used in hauling material to be used in the dam. A sum amounting to about \$7,000,000 has been set aside by the Reclamation Service with which to complete the various projects in Idaho.—*Edward L. Wells, Section Director, Boise, Idaho.*



TABLE 1.—Climatological data for December, 1910. District No. 12, Columbia Valley.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of clear days.	Prevailing wind direction.
Montana.																				
Anaconda.	Deer Lodge	5,300	9	27.1	+ 0.9	46	21	8	11	25	0.25	- 0.49	0.37	1.4	18	7	6		C. D. Demond.	
Bison Mountain.	Powell.	7,240									0.88		0.37	16.0	7	13	14	4		C. H. Anderson.
Butte.	Silver Bow	5,716	15	26.0	- 0.1	46	23	10	101	28	0.30	- 0.42	0.30	3.0	1	17	7	7	nw.	J. R. Wharton.
Columbia Falls	Flathead.	3,100	16																	Mrs. I. M. Kennedy.
Como.	Ravalli.		2	27.4		42	23	10	151	20	0.48		0.34	5.0	5	13	8	10		Hiram Platt.
Dayton.	Flathead.	2,800	6																	C. E. Proctor.
East Anaconda.	Deer Lodge	5,500	5	27.5		46	1	4	11	27	0.22		0.10	1.3	3	18	7	6	sw.	C. D. Demond.
Fortine.	Lincoln	2,975	4	29.0		44	8	7	15	27	0.88		0.24	12.5	8	4	2	12	sw.	Mike Petery.
Hamilton.	Ravalli.	3,575	7	27.6		49	23	9	101	23	0.49		0.36	2.0	3	11	17	3	e.	Blitter Root Valley Ir. Co.
Hat Creek.	Powell.	6,000	1								0.40		0.16	7.3	8	6	14	11	w.	M. K. Landreth.
Kalispell.	Flathead.	2,965	11	29.5	+ 5.6	42	4	5	31	25	0.52	- 1.33	0.26	3.0	9	2	3	26	w.	Weather Bureau.
Lost Creek.	Deer Lodge	5,200	1								0.32		0.20	4.5	2	20	4	7	sw.	Frank Henault.
McGinnis Meadows.	Lincoln		1																	H. L. Beebe.
Missoula.	Missoula.	3,225	32	25.2	+ 0.7	40	24	2	141	27	0.27	- 1.16	0.06	1.7	5				sw.	U. S. Weather Bureau.
Ophir.	Powell.	8,800	1								0.24		0.12	3.2	4	16	9	6	w.	E. S. Wilton.
Ovando.	do.	4,207	10	14.7	- 6.1	35	23	-10	31	41	1.70	- 0.16	0.40	14.7	9	1	23	2	w.	S. B. Muchmore.
Philipsburg.	Granite.	5,275	7	26.1		46	12	4	15	41	0.26		0.20	0.5	2	12	5	3	sw.	G. T. Bramble.
Plains.	Sanders.	2,475	12	29.3	+ 1.0	42	2	12	31	19	0.10	- 0.53	0.10	1.0	1	6	0	25	sw.	M. H. Pierce.
Pleasant Valley.	Flathead.	3,500	3	26.0		44	6	2	13	31	1.16		0.23	6.0	11	4	24	3		A. D. Stillman.
Polson.	do.	2,920	2	32.2		62	5	10	20	46	0.60		0.60	3.0	1					F. P. Brown.
St. Ignatius.	Missoula.	2,700	4	30.3		49	21	13	19	26	0.32		0.12	3.6	4	4	6	21		U. S. Reclamation Service.
St. Regis.	do.	2,650	2	28.8		43	5	9	14	30	1.02		0.41	8.2	4	0	25	6	ne.	R. D. Lee.
Saltese.	do.	3,600	6								4.00		1.15	28.0	7	9	0	22	w.	E. K. Tarbox.
Snowshoe.	Lincoln	4,500	4	26.6		46	13	9	20	25	4.51		0.94	32.9	15	6	3	22	w.	J. C. Riter.
Troy.	do.	1,880	14																	W. E. Milnor.
Willow Glen Stek. Farm.	Deer Lodge	5,064	1			45	3				T.		T.	0.2	0	8	16	7	s.	G. E. Luce.
Wyoming.																				
Afton.	Uinta.	6,200	6	19.1	- 0.9	45	9	-14	26	33	0.93	- 0.43	0.20	6.5	9	12	7	12		A. V. Call.
Alta.	do.	7,000	1	20.2		52	1	-13	26	43	2.11		0.80	9.6	11	11	2	18	sw.	Mrs. Lucy Brown.
Bedford.	do.	5,900	11	17.5	- 1.3			-14	26	36	1.38	- 0.07	0.45	2.8	9	12	6	13	w.	C. G. Heiner.
Snake River.	Yellowstone Park.	7,000	4	15.8		38	1	-16	15	46	3.20		0.70	36.0	8	11	3	17	w.	U. S. Army.
Nevada.																				
San Jacinto.	Elko.		5	30.0		57	2	12	26	25	0.44		0.20	4.0	4	16	0	15	n.	Mose Jones.
Utah.																				
Standrod.	Boxelder.		6	30.6		57	1	11	17	27	0.85		0.36	3.0	8	11	8	12	sw.	T. B. Jones.
Idaho.																				
Albion.	Cassia.		9	32.0		59	1	12	26	32	1.01		0.60	2.0	5	8	10	13	w.	G. A. Axline.
Blackfoot.	Bingham.	4,503	15	28.0	+ 4.3	51	1	10	22	28	0.83	- 0.08	0.35	1.0	5	1	20	10	sw.	E. A. Dowd.
Blackfoot Dam.	do.		2	21.8		45	1	-7	25	37	1.05		0.20	13.1	11	11	13	7	nw.	N. W. Isfeld.
Bocks Ranch.	Elmore.	3,500									2.10		0.69	2.3	9					Wm. Bock.
Bogus Creek.	Boise.	4,200																		F. P. Ingraham.
Boise.	Ada.	2,739	26	34.8	+ 2.6	50	3	22	22	18	1.13	- 0.59	0.67	4.0	10	3	11	17	nw.	U. S. Weather Bureau.
Bonniers Ferry.	Bonner.	1,850	2	31.4		46	9	11	11	24	2.22		0.67	4.0	10	3	11	17	sw.	W. H. Heldeman.
Boulder Mine.	Boise.	4,800	1								2.71		0.77	14.7	8	22	3	6		Patrick Moriarty.
Buhl.	Twin Falls.	3,400	5			57	8	19	27	23									w.	H. J. Idema.
Caldwell.	Canyon.	2,372	6	33.9		47	24	18	22	25	0.61		0.20	1.2	9	2	13	16	w.	Rev. W. J. Boone.
Camas.	Fremont.	4,815	2																	Mrs. Edna Faulkner.
Cambridge.	Washington.	2,651	14	29.9	+ 3.6	42	17	13	6	21	1.30	- 1.95	0.78	2.5	6				sw.	Chas. H. Shepherd.
Cedar Creek Dam.	Twin Falls.														2	4	17	10	w.	H. B. Collings.
Chesterfield.	Bannock.	5,424	15	27.0	+ 6.8	59	2	0	25	37	0.67	- 0.39	0.23	1.0	6	11	14	6	sw.	Chas. S. West.
Coeur d'Alene.	Kootenai.	2,157	20																	Jos. T. Scott.
Cottonwood Creek.	Boise.	4,000																		Frank Hedrick.
Culdesac.	Nez Perce.	1,520	3	32.7		50	11	21	19	23	0.45		0.41	2.0	2	8	12	11		R. R. Richmond.
Deary.	Latah.							14	20				0.65		20	0	11	sw.	H. P. Henry.	
Dent.	Nez Perce.	1,350	6	35.6		47	2	25	31	18	2.10		0.52	6.0	9	4	11	16		Emil Schuessler.
Driggs.	Fremont.	6,097	3	19.7		45	1	-11	22	39	1.48		0.50	14.0	5	4	6	21	s.	Walter H. Durrant.
Edie.	do.	2	2	22.0		42	19	0	22	34	0.31		0.31		1	14	13	4	s.	Geo. B. Edie.
Emmett.	Canyon.	2,350	4	34.4		50	3	19	22	22	0.70		0.42	0.2	7	5	7	19	ne.	C. P. Kar.
Forney.	Lemhi.		13	20.6	- 0.7	43	2	5	15	35	0.45	- 1.26	0.33	7.5	2	10	7	14	s.	M. B. Merritt.
Garden Valley.	Boise.	3,600	4								1.12		0.35	8.5	6	16	2	13	nw.	Mrs. Gertrude M. Ross.
Garnet.	Elmore.	2,575	11	37.8	+ 3.0	54	0	22	28	24	1.13	+ 0.43	0.60	0.0	5	11	6	14	e.	Asa A. Kenison.
Glenns Ferry.	do.	2,569	3	35.7		57	1	16	26	30	1.37		0.43	T.	6	17	2	12	nw.	I. E. Perkins.
Gooding.	Lincoln.	3,572	2	32.6		55	1	12	22	27	1.50		0.81	T.	7	11	10	10	w.	John Krall, Jr.
Grand Forks.	Shoshone.	3,000		27.5		40	5	6	15	20	4.79		0.74	24.7	13	9	1	21	w.	Henry Kottkey.
Grandview.	Owyhee.		2	35.0		49	4	17	22	25	1.00		0.48	T.	5	2	13	16	nw.	N. G. Massey.
Grimes Pass.	Boise.	5,200	2								2.20		0.63	10.9	12				e.	Joseph M. Clarke.
Guffey.	Owyhee.	2,381	2	36.8		52	3	19	22	21	0.97		0.28	T.	12	10	16	5	e.	Fred Perry.
Hailey.	Blaine.	5,347	7	23.3		42	1	38	28	27	1.32		0.44	7.4	7	19	7	8	n.	U. S. Forest Service.
Hotspring.	Owyhee.	2,752	5	37.0		54	4	20	26	23	1.26		0.32	T.	5	6	11	14		J. M. Waterhouse.
Idaho City.	Boise.	4,000	9																	Mrs. Emma L. Hammer.
Idaho Falls.	Bingham.	4,742	16	29.0	+ 6.8	53	1	12	22	31	0.40	- 0.84	0.10	1.0	7	9	6	16	ne.	Dr. T. M. Bridges.
Indian Valley.	Washington.	2,999	1								0.89		0.27	5.5	8	5	2	24	e.	A. M. Henke.
Irwin.	Bingham.	6,500	2																	Eva Johnston.
Kellogg.	Shoshone.	2,305	6	32.2		46	26	19	26	24	2.27		0.37	7.1	13	1	0	30		W. McM. Huff.
Kirkham.	Boise.		1								3.00		2.00	5.0	5	11	8	12	w.	Mrs. Josie B. West.
Kooskia.	Idaho.	1,261	1																	U. S. Forest Service.
Lakeview.	Bonner.	2,250	14	33.6	+ 2.1	49	6	10	31	23	2.59	- 0.58	0.58	3.0	9	0	6	25	sw.	E. D. Faust.
Landore.	Washington.	5,300	6	26.2		42	1	8	22	22	3.52		0.80							



TABLE 1.—Climatological data for December, 1910. District No. 12—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.
Idaho—Continued.																			
Pine.	Elmore.	4,100	1								1.87		0.67	11.5	5	11	11	9	Mrs. Jennie Potter.
Pleasant Valley.	Ada.	3,000	3	33.6		50	5	18	22	20	1.14		0.58	T.	7	7	5	19	C. E. Friedrich.
Pocatello.	Bannock.	4,483	11	31.4	+ 3.0	51	1	16	27	25	1.20	+ 0.34	0.40	1.0	10	6	12	13	U. S. Weather Bureau.
Pocatello Nursery.	do.	5,396	3																Mrs. Anna M. Wrensted.
Poplar.	Bingham.																		C. M. Lawrence.
Porthill.	Bonner.	1,665	22	32.2	+ 3.5	42	9†	18	20†	21	1.55	- 1.10	0.39	6.5	8	7	2	22	H. A. French.
Powers Ranch.	Boise.	4,300	1								2.79		0.90	7.6	11	21	0	10	Mrs. Mary French.
Pyle Creek.	do.	3,100	1																P. V. Smith.
Rattlesnake Creek.	Elmore.	4,000	1								2.30		0.64	4.2	9	10	10	11	Richard Green.
Richfield.	Lincoln.		1	30.2		51	1	10	25	27	1.23		0.38	0.3	8	14	4	13	Idaho Irrigation Co.
Roseworth.	Twin Falls.		1								1.01		0.62	1.7	6	1	16	14	D. B. Hartwell.
Ruby Creek.	Boise.	4,400	1								3.86		1.06	11.8	11	4	15	12	O. A. Hatter.
Rupert.	Lincoln.	4,204	4	31.1		54	1	9	25	27	0.76		0.28	T.	7	15	3	13	Will Parry.
St. Maries.	Kootenai.	2,293	14																J. S. Turnbull.
Salmon.	Lemhi.	4,040	5	14.8		42	4	-12	18	32	0.55		0.34	7.4	5	9	11	11	E. K. Abbott.
Salmon River Dam.	Twin Falls.		3	33.0		63	1	13	26	31	1.22		0.68	1.3	10	10	7	14	Arch. M. Gilbert.
Sandpoint.	Bonner.	3,088		33.0		47	29	22	10†	18	3.04		0.48	3.0	8	2	5	24	s.
Sheep Hill.	Boise.	5,000	2								2.69		0.77	12.7	11				E. H. Edgerton.
Shoshone.	Lincoln.	3,968	3	31.5		50	1	12	22†	23†	1.13		0.41	0.5	7				Clifford M. Gardner.
Silver City.	Owyhee.	6,280	3								3.47		1.04	14.7	12	11	11	9	O. A. Truman.
Smith Prairie.	Elmore.	6,200	1								2.42		0.70	10.5	12				A. D. Bradford.
Smith Ranger Station.	Bonner.	1,080	2								2.61		0.60	18.5	9	8	6	17	Wm. W. Newell.
Soldier Creek.	Blaine.		2	24.0		44	2	1	26	36	1.29		0.50	4.5	5	15	12	4	T. D. Crittenden.
Springfield.	Bingham.	4,420	2	29.2		53	1	7	25	31	0.98		0.47	1.5	5	6	15	10	J. E. Miner.
Sugar.	Fremont.	4,420	2	25.2		44	2	9	30	30	1.07		0.40	2.5	6	13	7	11	Mrs. W. A. Edwards.
Sunnyside.	Elmore.		2	33.5		51	1	17	22	24	1.09		0.45	T.	5				Utah-Idaho Sugar Co.
Tripod Mountain.	Boise.	4,300	2								1.00		0.35	3.6	7	9	12	10	E. A. Wilmut.
Twin Falls.	Twin Falls.	3,825	6	32.2		56	1	15	25†	28	1.13		0.59	0.4	7	12	16	3	Mrs. Verna Paddock.
Vernon.	Fremont.		13	23.6	+ 2.6	47	1	2	25	29	1.68	- 0.06	0.40	11.1	9	10	8	13	J. A. Waters.
Wallace.	Shoshone.	2,728	3	31.1		42	2	17	15	21	4.14		0.87		16				A. M. Slattery.
Wendell.	Lincoln.	3,400	3	33.3		55	1	14	26	27	1.39		0.48		6	9	10	12	U. S. Weather Bureau.
Washington.																			
Aberdeen.	Chehalis.	162	19	41.9	+ 0.9	54	2†	30	11†	21	12.22	- 1.71	1.29	0.0	22	5	22	9	C. S. Weatherwax.
Anacortes.	Skagit.	60	16	42.0		57	9	30	11	20	4.66	+ 0.88	0.66	T.	21	2	20	2	Douglas Allmond.
Baker.	do.	200	4	40.3		54	17†	30	10†	23	11.66		2.03	4.4	18	9	0	22	Robt. M. White.
Bellingham.	Whatcom.	60	15	43.7	+ 1.8	60	1	26	31	26	7.35	+ 3.14	3.03	0.0	17	8	5	18	Sanford B. Mayhew.
Blaine.	do.	57	13	40.6	+ 3.8	53	1	27	31	17	8.04	+ 1.97	2.60	3.0	22	3	17	11	John W. Sheets.
Blewett.	Chelan.	2,200	1																John Burmeister.
Bremerton.	Kitsap.	30									5.15		0.84	0.0	16				U. S. Navy Yard.
Brewster.	Okanogan.	1,620		33.4		38	0†	15	25	15	1.19		0.34	4.5	7	5	4	22	Mrs. H. F. Bertram.
Bumping Lake.	Yakima.	3,400									1.85		0.53	11.7	11	8	6	17	U. S. Reclamation Service.
Cashmere.	Chelan.	960									6.04		1.20	0.0	12	9	2	20	Valley Power Co.
Cedar River.	King.	535	3								6.90	- 1.22	0.74	T.	21	2	14	15	Geo. Landsburg.
Centralia.	Lewis.	212	17	41.9	+ 1.2	55	2	28	20	22	6.90		0.74	T.	21	2	14	15	I. S. Turner.
Cheney.	Spokane.	2,351	11	31.8		55	13	19	31	29			0.56	21.0	14	6	4	23	J. E. Buchanan.
Cle Elum.	Kittitas.	1,930	11	31.6	+ 1.1	43	9†	14	17	17	2.54	- 1.77	0.56	21.0	14	6	6	19	J. A. Balmer.
Clearbrook.	Whatcom.	140	7	38.5		51	8	23	31	23	9.71		2.00	0.0	19	3	4	24	Geo. Gibbs.
Clearwater.	Jefferson.	135	14																
Colfax.	Whitman.	2,300	21		+ 4.4	48	7	13	28	22	2.04	+ 0.18	0.32	8.0	11	3	3	25	W. H. James.
Colville.	Stevens.	1,635	10	31.5	+ 1.8	48	30	17	12	25†	1.33	- 0.84	0.25	5.5	11	8	4	19	W. L. Sax.
Concomully.	Okanogan.	2,300	10	27.9		39	17	13	28	22	2.04	+ 0.18	0.32	8.0	11	3	3	25	Wm. Baines.
Cowiche.	Yakima.	1,874									1.49	- 0.86	0.34	4.0	9	10	2	19	U. S. Reclamation Service.
Crescent.	Lincoln.	2,250	10	30.0	+ 1.0	43	5	18	28	14	1.49		0.27	1.0	8	6	4	21	Otto Wollweber.
Davenport.	do.	2,450	1	29.8		42	6	13	25	18	1.12		0.32	2.0	8	2	8	21	W. H. Reed.
Dayton.	Columbia.	1,700	24	36.6	+ 2.4	56	9	26	20†	22	1.20	- 1.85	0.32	2.0	8	2	8	21	W. W. Hendron.
Detroit.	Mason.	30	2	41.4		57	2	26	31	20	7.58		1.08	0.0	16	4	9	18	Walter O. Eckert.
Dixie.	Walla Walla.	5,000	1								3.89		0.82	17.5	12	5	4	22	T. Z. Andrews.
Duckabush.	Jefferson.	380	2	38.8		54	1	28	31	21	11.91		2.05	0.0	17	9	9	13	E. G. Newman.
Eastound.	San Juan.	500	15	42.6	+ 1.6	53	4	28	10†	20†	6.85	+ 2.09		T.		5†	6†	4†	R. F. Harrison.
Ellensburg.	Kittitas.	1,571	22	30.8	+ 2.7	46	28	10	25	29	1.08	- 0.41	0.47	6.4	5	3	8	20	R. Lee Barnes.
Ephrata.	Grant.	1,265	7	34.4		54†	5	11	25	27						11	8	12	T. J. Cook.
Forks.	Challam.	480	1																
Fort Simcoe.	Yakima.	1,427	16																Dr. F. H. Monk.
Goat Lake.	Snohomish.	2,900	1								13.00		2.32	44.4	16				C. M. Mackintosh.
Gold Creek.	Yakima.	2,600	1																John W. Anderson.
Gold Hill.	do.																		U. S. Reclamation Service.
Goldendale.	Klickitat.	1,600	4	34.5		50	7	18	18	16	1.86		0.38	3.0	10	2	13	16	Klickitat Co. Abstract Co.
Granite Falls.	Snohomish.	397	7								8.43		1.12	T.	21	4	6	21	e.
Guler.	Klickitat.	2,200											0.17	2.2	8	5	3	23	Frank Kuehn.
Hatton.	Adams.	1,100	5	34.1		50	4	17	25	23	0.66		0.80	T.	9				Dr. A. V. Marion.
Huntsville.	Columbia.	1,490	2								1.63		0.12	14.1	14	6	7	18	Mrs. S. J. Hill.
Irene Mountain.	Okanogan.	3,015	1								1.05								Mrs. Mauda Shain.
Kachess Valley.	Kittitas.																		U. S. Reclamation Service.
Kennewick.	Benton.	367	15	39.0	+ 2.4	55	6	23	25	24	0.68	- 0.38	0.25	T.	5				Mrs. L. W. Soth.
Kettle Falls.	Stevens.	1,265	1	32.4		45	10	15	31	16									



TABLE 1.—Climatological data for December, 1910. District No. 12—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.				Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of overcast days.	Prevailing wind direction.	
Washington—Cont'd.																				
North Yakima.	Yakima.	1,070	1	32.0		48	5	17	21	20	0.71		0.28	3.6	6	6	6	19	nw.	Albert Bender.
Nutland.	Klickitat		1	37.6		53	7	20	17	23	0.92		0.27	3.0	9					Ruth J. Shepard.
Odessa.	Lincoln	1,540	7																	Wm. N. Neely.
Olga.	San Juan	50	20	43.1	+ 1.5	52	29	33	27	18	6.95	+ 2.14	1.46	7	16	5	5	21	se.	Cecil S. Willis.
Olympia.	Thurston	200	32	41.8	+ 0.8	54	7	28	13	19	7.71	- 1.97	0.94	0.0	19	6	5	20	sw.	M. O'Connor.
Omak.	Okanogan	850	1	32.3		49	5	9	30	30	1.27		0.28	1.5	7					Wm. G. Tait.
Oroville.	do.	922	1																	Fred. J. Fine.
Peols.	Garfield	5,000	1																	Samuel Gruell, sr.
Pomeroy.	do.	1,500	18	36.3	+ 0.9	50	29	25	25	15	0.51	- 1.77	0.20	1.0	6	4	9	18	w.	Peter McClung.
Port Crescent.	Challam	259	15	40.3	+ 2.0	51	8	29	27	17	7.46	+ 0.58	1.66	T.	20	0	10	21	a.	U. S. Weather Bureau.
Port Townsend.	Jefferson	80	20	43.3	+ 2.1	52	7	33	10	11	2.47	- 0.21	0.38	0.0	16	7	2	22	se.	F. Plummer.
Pullman.	Whitman	2,550	18	33.4	+ 1.3	51	2	24	21	19	2.24	- 0.69	0.70	4.0	10	4	9	18	se.	State Agricultural College.
Quinalt.	Chehalis	300	3																	A. V. Higley.
Republic.	Ferry	2,628	10	27.5	+ 1.4	42	8	6	25	22	1.34		0.35	9.0	9	4	4	23	nw.	George B. Stocking.
Rex Creek.	Chelan	1,135	3	35.9		50	28	29	11	15	2.80			11.5		21	11	18	nw.	Jas. W. Nicol.
Ritzville.	Adams	1,825	11																	Agent N. P. Ry.
Rock Lake.	Whitman	1,910	4	34.0		47	6	23	22	22	1.64		0.60	2.5	6	7	7	17	sw.	P. M. Ramsey.
Rosalie.	do.	2,425	18	33.8	+ 2.4	48	29	23	21	16	1.50	- 0.94	0.26	3.0	11	3	2	26	sw.	Hans Mumm.
Russells Ranch.	Yakima	2,870	1										0.63	20.9	10	8	5	18	w.	Miss Maggie M. Russell.
Seattle.	King	123	19	42.8	+ 1.6	57	2	32	31	14	3.47	- 2.57	0.55	T.	17	1	6	24	se.	U. S. Weather Bureau.
Sedro-Woolley.	Skagit	38	13	40.9	+ 0.3	55	1	27	13	19	8.25	+ 2.80	1.70	1.5	23	5	8	18	sw.	Mrs. H. L. Devin.
Sixprong.	Klickitat	1,240	3	36.5		50	4	20	17	16	0.79		0.18	1.5	10	5	4	22	sw.	C. E. Comstock.
Skagit Power Dam.	Whatcom			37.2		45	11	30	18	12	9.56		1.20	6.0	21	7	5	19	sw.	Skagit Power Co.
Snohomish.	Snohomish	100	16	40.7	+ 0.2	55	11	26	10	24	5.51	- 0.74	1.02	2.0	23	4	2	25	se.	Warren Hodges.
Snoqualmie Falls.	King	667	11	40.8		54	19	27	11	22	5.96	- 1.59	0.90	0.0	22	6	0	25		O. N. Wiswell.
Snoqualmie Pass.	Kittitas	3,000												66.0						C. E. Ingraham.
Snyders Ranch.	Okanogan	2,200	1										0.30	15.5	7	7	17	7	e.	George M. Snyder.
South Bend.	Pacific		15	43.2	+ 0.0	55	29	30	12	19	11.41	- 2.91	1.79	0.0	23	4	11	16	w.	Miss Winifred Eichner.
Spokane.	Spokane	1,943	20	34.2	+ 3.4	48	5	23	31	14	1.50	- 1.12	0.36	2.4	11	1	5	25	sw.	U. S. Weather Bureau.
State University.	King	1	1	41.6		54	2	31	10	13	3.57		0.54	0.0	20	5	4	22	se.	University of Washington.
Stokes Ranch.	Okanogan	2,670	1										0.19	18.2	12	9	12	10	nw.	Chas. W. Gunn.
Sullivan Lake.	Stevens	2,700																		U. S. Forest Ranger.
Summer.	Pierce	77	2	40.5		58	7	26	13	22	5.31		0.74	0.0	20	6	3	22	s.	H. E. Thompson.
Sunnyside.	Yakima	740	15	35.4	+ 2.5	55	4	22	21	25	0.68	- 0.16	0.19	2.5	9	2	12	17	e.	U. S. Reclamation Service.
Tacoma.	Pierce	213	24	41.8	+ 1.5	56	2	29	13	18	5.80	- 1.53	1.24	0.0	18	3	3	25	sw.	U. S. Weather Bureau.
Tatoosh Island.	Challam	86	25	45.1	+ 1.2	54	19	36	22	13	12.25	- 2.34	2.83	T.	22	1	5	25	no.	Do.
Tieton.	Yakima	2,000	1																	U. S. Reclamation Service.
Touchet.	Walla Walla	556	3	38.1		56	5	24	10	29	0.73		0.15	T.	10	7	5	19	sw.	D. W. Dorrance.
Touchet Ridge.	Columbia	2,500	1										1.30	16.0	10	5	6	20	sw.	R. H. King.
Trinidad.	Douglas	900	6	32.5		48	9	17	25	19	1.72		0.40	10.0	8	7	3	21	sw.	J. C. Wheeler.
Vancouver.	Clark	100	35	41.6	+ 2.9	55	5	27	13	23	3.59	- 3.03	0.57	0.0	19	4	3	24	s.	A. A. Quarnberg.
Vashon Island.	King	40	21	42.2	+ 1.3	55	1	30	11	14	5.74	- 1.39	1.12	0.0	22	6	1	24	s.	Miss Gertrude McClintock.
Wahluke.	Grant	410	6																	F. C. Koppen.
Wallace.	Okanogan	4,000	1										0.22	11.8	11	0	9	22	s.	G. A. Wallace.
Walla Walla.	Walla Walla	1,000	26	38.4	+ 2.4	56	23	27	22	23	0.63	- 1.47	0.20	0.7	10	2	6	23	s.	U. S. Weather Bureau.
Waterville.	Douglas	2,624	20	24.9	- 0.9	41	9	6	22	26	0.98	- 0.99	0.32	9.8	5	11	1	19	w.	O. R. Hopewell.
Wenatchee (near).	Chelan	1,169	11	30.8	+ 2.9	46	28	15	22	22	0.96	- 1.30	0.25	10.5	7	7	7	17	w.	George A. Pitcher.
Wilbur.	Lincoln	2,203	11	29.8	+ 2.3	40	4	11	27	25	1.12	- 1.02	0.40	2.5	5	7	1	23	s.	Rollin J. Reeves.
Yale.	Cowlitz	375	3	42.4		60	15	22	22	18	10.09		1.20	T.	21	5	9	17	e.	L. F. Williams.
Zindel.	Asotin	715	8	39.2		54	20	24	24	29	0.40		0.40	T.	1	5	17	9	n.	M. W. Zindel.
Oregon.																				
Albany.	Linn	212	30	42.1	+ 1.3	57	7	26	19	23	3.89	- 3.53	0.68	0.0	19	3	5	23	s.	F. M. French.
Ashland.	Jackson	1,963	28	39.2	- 0.2	61	1	24	20	18	2.52	- 0.73	0.90	0.0	10	3	13	15	w.	G. G. Eubanks.
Astoria.	Clatsop	16	51	44.7	+ 0.2	51	7	33	11	16	10.90	- 1.31	1.08	0.0	25	6	7	18	sw.	Irving Club.
Baker.	Baker	3,466	21																	U. S. Weather Bureau.
Bay City.	Tillamook	14	17	45.6	+ 0.8	60	10	28	10	25	7.40	- 8.44	1.10	0.0	25	5	5	21	se.	John O. Bosworth.
Bend.	Crook	3,629	29																	E. L. Kirk.
Black Butte.	Lane	1,200	10	38.1	- 1.0	50	1	25	19	18	6.75	+ 0.11	1.55	0.0	16	4	12	15	nw.	Wm. Harris.
Blalock.	Gilliam	237	13	39.5	+ 2.3	52	9	31	17	17	0.92	- 0.70	0.28	T.	7	2	6	23	e.	Geo. W. Long.
Burns.	Harney	4,157	20	26.6	+ 1.0	50	2	0	20	31	1.27	+ 0.05	0.48	17.0	5	24	4	3		J. C. Welcome, jr.
Cascade Locks.	Hood River	100	21	40.0	+ 1.5	49	8	30	20	12	9.51	- 7.05	1.32	0.0	22	7	1	23	e.	Val. W. Tomkins.
Casadero.	Clackamas	503	2	41.8		55	5	25	19	30	5.88		1.10	0.0	24	3	5	23	se.	Alf. Drill.
Christmas Lake.	Lake	4,300	4	30.6		53	1	3	22	38	0.86		0.25	2.0	8	4	9	18	sw.	John C. Green.
Condon.	Gilliam	2,884	4	38.2		57	1	22	9	28	1.30		0.33	0.5	7	15	9	7	n.	C. H. Williams.
Corvallis.	Benton	266	23	39.0	- 2.0	55	7	26	19	20	4.33	- 2.59	0.54	0.0	15	3	7	21	sw.	Oregon Agricultural College.
Dayville.	Grant	2,200	17	37.0	- 4.0	61	1	21	30	27	0.57	- 0.78	0.28	T.	9	14	5	12	se.	Dr. J. Campbell-Martin.
Deadwood.	Lane	350	1	43.7		54	7	31	20	17	11.17		1.60	0.0	21	5	9	17	sw.	Jos. Slemmons.
Doraville.	Columbia	600	10	40.0		52	7	27	11	21	5.35		0.72	0.4	26	3	3	25	se.	Jos. Hackenberg.
Drain.	Douglas	300	9	43.6		50	7	32	10	21</										



TABLE 1.—Climatological data for December, 1910. District No. 12—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
Oregon—Continued.																				
Marshfield	Coos	12	10	46.0		63	1	27	26	30	6.52		0.90	0.0	25				nw.	U. S. Weather Bureau.
Merrill	Klamath	4,070	5	33.6		50	6	15	26†	29	2.30		1.20	T.	4	12	7	12		Mrs. Agnes Ritchson.
Mikkalo	Gilliam	1,400	5	36.2		54	23	17	16	20	1.15		0.35	2.0	8	8	3	20	w.	Frank Little.
Miramonte Farm	Clackamas	195	23	41.4	+ 1.2	55	2†	26	20	18	3.93	- 2.32	0.43	0.0	20	2	7	22	s.	G. Muecke.
Monroe	Benton	350	14	43.2	+ 2.1	56	2	27	21	22	4.98	- 3.06	0.83	0.0	11	4	2	25	sw.	L. A. Peek.
Mount Angel	Marion	485	25								5.48	- 1.89	0.80	0.0	17	5	9	17	sw.	Dr. Urban Fisher, O. S. B.
Mountain Park	Hood River	1,440	5	37.4		49	23	26	21	17	6.16		1.00	3.5	16	0	1	30	w.	Raymond Markley.
Musick	Douglas	5,000	2	35.4		55	19	20	28	21	14.89		2.65	81.0	20	10	1	21	sw.	Alex. Lundberg.
Newport	Lincoln	69	24	47.6	+ 1.2	60	19	34	10†	20	5.41	- 5.11	0.57	0.0	22	5	9	17	nw.	Wm. Matthews.
Paisley	Lake	4,500	8																	E. C. Woodward.
Pendleton	Umatilla	1,070	22	40.0	+ 3.8	57	23†	30	4	25	0.81	- 0.73	0.33	0.2	10	5	9	17	sw.	E. F. Averill.
Pilot Rock	do	1,817	3	35.6		58	22	22	15	26	1.37		0.55	2.5	8	13	0	18	sw.	John P. McManus.
Pompell	Clackamas	3,879	16	33.3	+ 0.6	51	12	18	22	21	10.97	- 0.61	1.38	61.0	22	6	4	21	e.	O. C. Yocum.
Portland	Multnomah	57	41	42.9	+ 1.4	56	5	31	20	13	3.53	- 3.58	0.45	0.0	18	2	7	22	se.	U. S. Weather Bureau.
"P" Ranch	Harney	4,100	2																	J. P. Jefferson.
Prineville	Crook	2,864	15	34.4	- 1.6	60	1	12	20	32	1.34	+ 0.32	0.50	0.0	6	16	8	7		Geo. Whitels.
Prospect	Jackson	2,900	5																	E. T. Graham.
Ramsey	Wasco	1,350	10	32.7		53	23	14	17	25	1.12		0.25	7.4	9	7	2	22	w.	Mrs. Iva B. Collins.
Range	Grant	3,500	3	33.8		50	13	20	2†	26	0.18		0.04	0.0	9	16	0	15		Mrs. Emma Arbuckle.
Richland	Baker	2,350	10	33.7	+ 5.6	47	7	19	22	19	0.60		0.35	0.5	2	6	3	22		L. G. Morgan.
Riverside	Malheur	3,000	12	30.4	+ 3.6	43	11	8	22	24	0.75	- 0.57	0.25	1.5	6	9	4	18	n.	Mrs. Leah Fairman.
Roseburg	Douglas	510	33	43.4	+ 1.4	60	1	31	27	20	3.10	- 2.91	1.07	0.0	9	1	11	19	s.	U. S. Weather Bureau.
Salem	Marion	120	21	43.2	+ 1.3	56	2	30	20	17	4.02	- 1.90	0.80	0.0	19	2	2	27	sw.	M. P. Baldwin.
Slakiyou	Jackson	4,115	3	36.4		53	1	22	28	21	3.78		1.41	4.5	10	3	11	17	s.	Mrs. Anna Pearson.
Sparta	Baker	4,130	20																	Jos. A. Wright.
Stafford	Clackamas	400	15	42.6	+ 1.9	63	2	28	20	29	4.49	- 2.76	0.55	0.0	22				sw.	John P. Gage.
The Dalles	Wasco	112	37	39.4	+ 3.6	50	28	30	22	16	1.51	- 1.40	0.30	1.5	12	5	5	21	w.	S. L. Brooks.
Toledo	Lincoln	75	21	45.3	+ 3.9	60	24†	37	29†	22	7.75	- 2.62	1.50	0.0	13	11	14	6	sw.	C. B. Cusno.
Umatilla	Umatilla	340	23	38.2	+ 3.4	51	28	35	31	20	0.67	- 0.42	0.20	T.	9	6	6	19	w.	Mrs. Helen T. Duncan.
Vale	Malheur	2,242	19	34.1	+ 4.8	47	25	19	22	24	0.92	- 0.29	0.22	0.0	10	7	9	15	nw.	H. P. Osborne.
Van	Harney	3,506	6																	Geo. Howe.
Wallace Orchard	Polk	170	2	42.2		56	7	28	18†	21	4.57		0.58	0.0	17	3	9	19		Chas. A. Park.
Wallowa	Wallowa	2,935	8	31.6		46	9	19	26†	19	1.12		0.19	5.3	8	1	2	28	se.	L. J. Coverstone.
Wasco	Sherman	1,263	4	40.0		50	13	30	6†	21	0.98		0.30	3.0	7	4	12	15	w.	J. R. Howell.
Warm Spring	Crook	1,500	9	34.9		50	22†	21	27	36	0.63		0.30	0.0	4	7	6	18	nw.	Claude C. Covey.
Weston	Umatilla	1,800	19	36.7	+ 2.8	57	2†	25	19†	27	1.42	- 1.27	0.38	1.5	8	0	5	26	se.	M. A. Baker.
Williams	Josephine	1,368	19	39.4	- 0.2	60	4	23	25	22	2.86	- 2.87	1.08	10.0	8				n.	J. D. Dixon.
Yonma	Klamath	4,146	4	32.4		51	15	7	28	34	1.86		0.40	0.5	8	7	15	9	s.	Jacob Ruecke.

\* b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.

† Also on other dates.

‡ Separate dates of falls not recorded.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

|| Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

¶ Estimated by observer.

|| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.



TABLE 2.—Daily precipitation for December, 1910. District No. 12, Columbia Valley.

Stations.	River basins.	Day of month.																															Total.		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
Montana.																																			
Anaconda.	Missoula.			*	.16			T.	T.													T.		T.				T.	.05	T.		.04	0.25		
Bison Mountain.	do.			.37														T.					.09		.11			T.	.06	.08	.09	.08	0.88		
Butte.	do.			.30					T.															T.				T.		T.			0.30		
Columbia Falls.	Flathead.																																		
Como.	Bitter Root.		.05	.34					.03																					.02	.04		0.48		
Dayton.	Flathead.																																		
East Anaconda.	Missoula.			.10	.02			T.														T.	T.	T.				T.	.10	T.	T.	T.	0.22		
Fortine.	Flathead.	T.	.01	.20		.03	.04	.02	T.										T.					.20				T.	T.		.14	.24	0.88		
Hamilton.	Bitter Root.				.36																										.08	.05	0.49		
Hat Creek.	Missoula.			.02	.02	.16		T.		.01															.03			T.	.04		.01	.11	0.40		
Kalispell.	Flathead.	.01	.04	.13		.02		T.	.02	.01												T.	.04	.24			T.	T.		T.	.01	T.	0.52		
Lost Creek.	Missoula.		T.	T.																				T.				T.	.20		.01	.12	0.32		
McGinnis Meadows.	Kootenai.																																		
Missoula.	Missoula.			.06	.06	T.		.04	T.	.06															.05						T.	T.	0.27		
Ophir.	do.		T.																						.02	.12			.05			T.	0.24		
Ovando.	do.		.25	T.	T.																		.20	.40	.10	.10	.10	.05			.20	.30	1.70		
Philipsburg.	do.		T.	.20																										.06			0.26		
Plains.	Columbia.			T.																					.10								0.10		
Pleasant Valley.	Kootenai.		.04		.18		.02		.04	.11															.23	.19			.05	.05	.12	.13	1.16		
Polson.	Flathead.																																0.60		
St. Ignatius.	do.							.12	.06																						.01		.06	0.32	
St. Regis.	Missoula.																								.10	.41						.24	.27	1.02	
Saltese.	do.		.55	.40				.26	.80																1.15	.60			.42			1.02		4.60	
Snowshoe.	Kootenai.		.23	.20	.34	.06	.10	T.	.29	.35															.51	.60		.18	.17	.08		.94	.30	4.51	
Troy.	do.																	T.																	
Willow Glen Stock Farm.	Missoula.			T.																									T.				T.		
Wyoming.																																			
Afton.	Snake.			.18	.20			.15		.13	.03	.04	.15											.02						.03			0.93		
Alta.	do.			.14	.30			T.	.35	.12	.11	.11													T.	.04			T.	.16		.08	.17	2.11	
Bedford.	do.			.09	T.					.45	.18	.10	.20																	.08	.11	.09	.08	1.38	
Snake River.	do.			.30	.70			T.	T.	.50	T.	T.	.30												T.	T.	T.	.50		T.	.20	T.	.60	.10	3.20
Nevada.																																			
San Jacinto.	Snake.			.04						.20	.15																				.05			0.44	
Utah.																																			
Standrod.	Raft.			.05	.14					.09	.09	.36	.02													T.	T.					.06	.08	0.85	
Idaho.																																			
Albion.	Upper Snake.			.12	.05			T.		.69	T.	.10															T.			T.	T.	T.	.05	1.01	
Almo.	do.																																		
American Falls.	do.																																		
Blackfoot.	do.		T.	.35				T.	.18	T.	.08	.15																				T.		0.83	
Blackfoot Dam.	do.			.19	.06			.07	T.	.20	.12	.07	.18																		.02	T.	.04	.07	1.05
Book's Ranch.	Boise.			.42	.69			T.	.14	.42	.08	.24																				.06	.03	2.10	
Bogus Creek.	Payette.																																		
Boise.	Boise.			.69	.01		T.	.01	.20	.09	.03	.05																						1.13	
Bonniers Ferry.	Upper Columbia.		.12	.21	.25	.08			.25																	T.	.67	.12		.05		.19	.28	2.22	
Boulder Mine.	Boise.			.54	.57				.77		.11	.02																		.13		.34	.23	2.71	
Buhl.	Upper Snake.				.20	.10				.30	.10																								
Burke.	Upper Columbia.																																		
Caldwell.	Boise.			T.	.10	.01			.20	.07	.10	.07																						0.61	
Camas.	Lost R. Region.																																		
Cambridge.	Middle Snake.			.78	.20			.11	.20																									1.39	
Cedar Creek Dam.	Upper Snake.																																		
Chesterfield.	do.			.23					.09		.14	.11																			T.	T.	.08	.02	0.67
Coeur d'Alene.	Upper Columbia.																																		
Cottonwood Creek.	Boise.																																		
Crawford.	Payette.																																		
Culdesac.	Clearwater.																																		
Deary.	do.																			</															



TABLE 2.—Daily precipitation for December, 1910. District No. 12—Continued.

Stations.	River basins.	Day of month																															Total.			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
Idaho—Continued.																																				
Pierson	Salmon																																			
Pine	Boise		T.	.67						.51		.21												T.							.27	.21		1.8		
Placeville	do.																																	1.2		
Pleasant Valley	do.			.58	.07				.16	.18	.06	.06													.04							T.	T.	1.1		
Pocatello	Upper Snake			.16					.20	.19	.03	.40											.08		.01				.01	T.		.06	.07	1.2		
Pocatello Nursery	do.																																	0.9		
Poplar	do.																																	1.8		
Porthill	Upper Columbia		.10		.37	.07			.30														.25	.30							.08		.02	1.8		
Powers Ranch	Boise			.00	.70				.24	.52	.01								T.														.42	2.7		
Pyle Creek	Payette																																			
Rattlesnake Creek	Boise				T.	T.																			T.	T.							.22	.30	0.4	
Richfield	Wood-Malad			.38	.20				.01	.35	.11	.12	.03												T.	T.							.03	T.	1.1	
Roseworth	Upper Snake																																			
Ruby Creek	Boise			.81	1.06			.04	.20	.65	.23														.13	.03	T.			.08		.30	.33	3.8		
Rupert	Upper Snake			.17	.09				.28	.08	.09	.01																				.04	T.	0.7		
St. Maries	Upper Columbia																																			
Salmon	Salmon			.04	.08		T.			.34					T.									.03	.06									0.5		
Salmon River Dam	Upper Snake			.15	.09				T.	.08	.15	.04								.01						.03						.02	.03	1.2		
Sandpoint	Upper Columbia			.34	.37		.44		.34																.48	.47						.36	.24	2.6		
Sheep Hill	Boise			.70	.77	T.		.02	.22	.29	.15	.04		T.											.04	T.	T.						.15	2.6		
Shoshone	Wood-Malad			.23	.10				.12	.41	.13	.12	.02																					1.3		
Silver City	Owyhee		1.04	.18				.02	.60	.68	.38	.14								.08														3.4		
Smith Prairie	Boise			.20	.68		T.		.70			.34																						2.4		
Smith Ranger Station	Upper Columbia			.38	.22		.28		.25																	.60			.03		.27	.22	.27	.12	2.6	
Soldier Creek	Wood-Malad			.44					.50	.10	.05																							1.2		
Springfield	Upper Snake			.47					.27	.05	.18													.01										0.9		
Sugar	do.			.06	.40				.22		.06	.29																						1.0		
Sunnyside	Middle Snake		T.	.11	.45			.16		.32	.05																							1.0		
Tripod Mountain	Payette			.35	.03		.09	.20																										1.1		
Twin Falls	Upper Snake		.10		.10				.50	.10	.02									.10					T.									1.3		
Vernon	do.			.12	.40				.38	.10	.10	.18																						1.0		
Wallace	Upper Columbia			.29	.35	.33	T.	T.	.07	.40	.17		T.											.03	.03	.40	.68	T.	T.	.13	.11	.02	.87	.25	4.1	
Wendell	Wood-Malad			.30	.26				.02	.48	.15	.18																						1.3		
Washington.																																				
Aberdeen	Coast		.44	.83	.31	.98	1.29	.35	.22			.86				.53	.86			.19		.06	.88	1.15	.35	.11	1.06	.05	.28	.63	.70	.07	12.25			
Anacortes	Puget Sound		.13	.12	.27	.07	.29	.45	.19	.36						.38	.18	.12	.02				.63	.06	.07	.06	.28	.01	.22	.02	.01	T.	4.66			
Baker	do.		T.	.75	.39	.21	1.27	.57	.60	1.10			.11			.27	.32					.43											11.66			
Bellingham	do.		.15	.25	T.			1.0	.88	.31	.42	T.				.47	.45					T.		.80	3.03	.10	T.	.06	.06	.08	.07	.04		7.35		
Blaine	do.		.22	.19	.30	.16	.86	.80	.20	.40	.06			T.	.11		.34	.33	.01				T.	.01		.71	2.60	.01	.09	.16	T.	.28	.10	T.	8.00	
Blewett	Wenatchee			.16	.72	.64		.84	.28	.22	.38						.28	.40	.12					.09	.48	.04				.16	T.	.04	.30		5.15	
Bremerton	Puget Sound		.07			.34		.15	T.	.33				T.			T.	.15						.14	T.						.01			1.15		
Brewster	Columbia																																			
Bumping Lake	Yakima																																			
Cashmere	Wenatchee		T.	T.	.59	T.	.05	.07		.29	T.					T.	.16		.07				.02	.30	.01							T.	.18	.11	1.85	
Cedar River	Puget Sound		.20	.35	.31	.12	.43	.04	.06	1.20							.64							1.07										6.04		
Centralia	Coast		.15	.55	.28	.74	.60	.31	.25	.30	.05					.21	.52					.06		.60	.67	.32		.28	.14	.03	.16	.65	.04	6.96		
Cheney	Spokane		.01							.28																										
Cle Elum	Yakima		.03	.10	.15		.16		.40	.14	.12		.06				.28						.07	.56	.10			.30					.07	2.54		
Clearbrook	Puget Sound		.33	.67	.40	.44	1.13	.58	.61	.31	.11					.22	.30							2.00	1.55	.03	.03	.27	.06	.17	.48			9.71		
Clearwater	Coast																																			
Colfax	Palouse																																			
Colville	Columbia			.09	.13	.25		.32	.18	.28															.16	.21	.09							2.04		
Conconully	Okanogan			.08	.14	.04	.25	.08	.13	.15								.15							.15	T.					.11	.05		1.33		
Cowiche	Yakima																																			
Crescent	Spokane		.13	.15	.20	.05	.06		.14	.34															.31							.11		1.40		
Davenport	Columbia		.12		.21	.23			.12	.27															.10	.03	.04							1.12		
Dayton	do.			.04	.28	.03				.31								T.	.07						.03	.32	.04							1.20		
DeWitt	Puget Sound		.30	.56	.62	.83	1.08		.26	.29	.60					.60	.64								.51	.57	.08		.23		.53	.13	T.	.35	.05	7.58
Dixie	Columbia			.06	.45	.26			T.	.82							.06	.14							T.	.32	.74	T.						3.80		
Duckabush	Puget Sound		.70	2.00	.90	.31	2.05	.73	.12	.87	.03					.25	.72								.28	.90				.60		.48	.48	.02	11.91	
East Sound	do.												T.			.80	1.07								.17	.79								6.85		
Ellensburg	Yakima				.24	T.			.16						T.		.47																	1.08		
Ephrata	Columbia																																			
Forks	Coast																																			
Fort Simcoe	Yakima																																			
Gold Lake	Puget Sound			1.57	.63	.42	.63	.32	.37	.76							.32	.20						.47		2.03	2.32			.62	.23		1.16	.95	13.00	
Gold Creek	Yakima																																			
Gold Hill	do.																																			
Goldendale	Columbia		.20	.20	.20			.27		.20						.05	.05	.38							.06	.20								1.86		
Granite Falls	Puget Sound																																			



87
14
20
58
79
42
23
66
76
04
39
47
51
28
07
03
58
44
22
06
56
04
15
19
05
44
71
00
04
33
20
88
55
01
-
-
-
00
66
33
33
00
66
44
04
33
88
22
66
11
77
88
11
22
55
11
77



TABLE 2.—Daily precipitation for December, 1910. District No. 12—Continued.

Stations.	River basins.	Day of month																															Total.		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
Idaho—Continued.																																			
Pierson	Salmon																																		
Pine	Boise		T.	.67					.51		.21												T.								.27	.21	1.87		
Placeville	do.																																		
Pleasant Valley	do.			.58	.07				.16	.18	.06	.06														.04					T.	T.	1.14		
Pocatello	Upper Snake			.16					.20	.19	.03	.40										.08			.01			.01	T.		.05	.07	1.20		
Pocatello Nursery	do.																																		
Poplar	do.																																		
Porthill	Upper Columbia		.10		.37	.07			.30														.25	.39						.08		.02	1.58		
Powers Ranch	Boise			.00	.70				.24	.52	.01								T.													.42	2.79		
Pyle Creek	Payette																																		
Rattlesnake Creek	Boise				T	T.																		T.	T.				T.		.22	.30	0.		
Richfield	Wood-Malad			.38	.20				.01	.35	.11	.12	.03												T.	T.					.03	T.	0.		
Roseworth	Upper Snake																																		
Ruby Creek	Boise			.81	1.06			.04	.20	.65	.23													.13	.03	T.		.08		.30	.33	3.86			
Rupert	Upper Snake			.17	.09				.28	.08	.00	.01													T.					.04	T.	0.76			
St. Marie	Upper Columbia																																		
Salmon	Salmon			.04	.08		T.		T.	.34				T.									.03	.06							.02	.03	0.55		
Salmon River Dam	Upper Snake			.15	.09				T.	.68	.15	.04								.01													1.22		
Sandpoint	Upper Columbia			.34	.37		.44		.34																.48	.47				.36	.24	3.04			
Sheep Hill	Boise			.70	.77	T.		.02	.22	.29	.15	.04		T.											.04	T.			.04	.27	.15	2.69			
Shoshone	Wood-Malad			.23	.10			.12	.41	.13	.12	.02																				1.13			
Silver City	Owyhee		1.04	.18			.02	.60	.68	.38	.14							.06							.05	T.		.06		.18	.19	3.47			
Smith Prairie	Boise			.20	.68		T.		.70		.34														T.	.05		.10		.35	.24	2.42			
Smith Ranger Station	Upper Columbia			.38	.22		.28		.25															.60				.27		.22	.27	.12	2.61		
Soldier Creek	Wood-Malad			.44					.50	.10	.05																				.20	1.29			
Springfield	Upper Snake			.47					.27	.05	.18												.01					T.			T.	0.98			
Sugar[]	do.			.06	.40				.22		.06	.29																			.04	1.07			
Sunnyside	Middle Snake		T.	.11	.45				.16		.32	.05																				1.09			
Tripod Mountain	Payette			.35	.05		.03	.20																	T.			.09		.23	.05	1.00			
Twin Falls	Upper Snake		.10		.10				.59	.10	.02								.16													1.30			
Vernon	do.			.12	.40				.38	.10	.10	.18																				1.68			
Wallace	Upper Columbia			.39	.35	.33	T.	T.	.07	.40	.17		T.										.03	.03	.40	.68	T.	T.	.13	.11	.02	.87	25	4.14	
Wendell	Wood-Malad			.30	.26				.02	.48	.15	.18																			T.	T.	1.39		
Washington.																																			
Aberdeen	Coast		.44	.83	.31	.98	1.29	.35	.22							.53	.86				.19		.06	.88	1.15	.35	.11	1.08	.05	.28	.63	.70	.07	12.22	
Anacortes	Puget Sound		.13	.12	.27	.07	.29	.45	.19	.38						.38	.18	.12	.02					.63	.66	.07	.06	.38	.01	.22	.02	.01	T.	4.66	
Baker	do.		T.	.75	.39	.21	1.27	.57	.60	1.10		.11				.27	.32					.43			2.03								11.66		
Bellingham	do.		.15	.25	T.		.10	.88	.31	.42	T.			.10		.47	.45							.80	3.03	.10	T.	.64	.32	.24	.75	1.10	7.35		
Blaine	do.		.22	.19	.30	.16	.86	.80	.20	.40	.06			.11		.34	.33	.01				.01		.71	2.60	.01	.09	.16	T.	.28	.10	.10	T.	8.04	
Blewett	Wenatchee																																		
Bremerton	Puget Sound		.16	.72	.64		.84	.28	.22	.38						.28	.40	.12						.09	.48	.04			.16	T.	.04	.30		5.15	
Brewster	Columbia		.07			.34		.15	T.	.33				T.		T.	.15							.14	T.				.01				1.19		
Bumping Lake	Yakima																																		
Cashmere	Wenatchee		T.	T.	.59	T.	.06	.07		.29	T.					T.	.16		.07				.02	.30	.01						T.	.18	.11	1.85	
Cedar River	Puget Sound		.20	.55	.31	.12	.43	.04	.06	1.20							.64							1.07									6.04		
Centralia	Coast		.15	.55	.28	.74	.60	.31	.25	.30	.06					.21	.52					.05		.60	.67	.32		.28	.14	.03	.16	.66	.04	6.90	
Cheney	Spokane		.01							.28																									
Cle Elum	Yakima		.03	.10	.15		.16		.40	.14	.12		.06				.28						.07	.56	.10			.30				.07		2.54	
Clearbrook	Puget Sound		.33	.67	.40	.44	1.13	.58	.61	.31	.11					.22	.30							2.00	1.55	.08	.08	.27	.08	.17	.48		9.71		
Clearwater	Coast																																		
Colfax	Palouse																																		
Colville	Columbia			.09	.13	.25		.32	.18	.28														.16	.21	.09							2.04		
Conconully	Okanogan			.08	.14	.04	.25	.08	.13	.15						.15								.15	T.					.11	.06		1.33		
Cowiche	Yakima																																		
Crescent	Spokane		.13	.15	.20	.05	.06		.14	.34														.31		.04							1.40		
Davenport	Columbia		.12		.21	.23			.12	.27														.10	.03	.04							1.12		
Dayton	do.			.04	.28	.03				.31									.07						.03	.12							1.20		
Detroit	Puget Sound			.30	.56	.62	.83	1.08	.26	.29	.60					.60	.64																7.58		
Dixie	Columbia			.05	.45	.26			T.	T.	.82						.06	.14						.51	.57	.08		.23			.27	.14	3.89		
Duckabush	Puget Sound		.70	2.00	.90	.31	2.05	.73	.12	1.87	.00					.25	.72							.28	.90				.07	.48	.48	.02	11.91		
East Sound	do.		*	2	*	*	*	*	3.00	.50			T.			.80	1.07								.79			.60					6.85		
Ellensburg	Yakima				.24	T.				.16														.17					.04				1.08		
Ephrata	Columbia																																		
Forks	Coast																																		
Fort Simcoe	Yakima																																		
Goat Lake	Puget Sound			1.57	.63	.42	.63	.32	.37	.76						.32	.20						.47		2.03	2.32			.62	.23		1.16	.95	13.00	
Gold Creek	Yakima																																		
Gold Hill	do.																																		
Goldendale	Columbia		.20	.20	.20			.27		.26						.05	.05	.38						.06	.20								1.86		
Granite Falls	Puget Sound		.12	.68	.57	.06	.72	.28	.54	.45	.32					.18	.28	T.						.12	1.12	.78		.20	.36	.40	.11	.38	.59	.19	8.43
Guler	Columbia																																		



TABLE 2.—Daily precipitation for December, 1910. District No. 12—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Washington—Cont'd.																																		
Peola.	Snake.			.35	.24		.06	.18									.07						.13	.10	.08				.30		.43	.04	1.98	
Pomeroy.	do.			.20	.05												.05	.05															0.51	
Port Crescent.	Coast.	.15	.50	.29	.18	1.45	.70	.03	.96			.03	.01			.26	.22				.07		.77	1.14	.03	T.	.07	T.	.02	.29	.20		7.46	
Port Townsend.	Puget Sound.	.10	*	.38	.10	.12	.02	.10								.18	.3	.02					.18	.38		*	*	.45		.08			2.47	
Pullman.	Palouse.		.12	.10	.30	.10		.19	.33								T.	.05						.70						.05			2.24	
Quinalt.	Coast.																																1.34	
Republic.	Kettle.		.05	.25		.10	.05	.10	.24								T.						.35	.10						.10			2.80	
Rex Creek.	Columbia.	.27	.02	.20	.10	.40	.02	*	*	*	*	.32			.02	T.	.32						.32	.46			.16			.04	.09			
Ritzville.	do.																																1.64	
Rock Lake.	Palouse.			.60					T.	.45							.05						.21		.18					.16	.07		1.54	
Rosalia.	do.			.20	.19			.16	.25								.05						.05	.26	.07			.04		.18			2.09	
Russell's Ranch.	Yakima.	.02	.31	.22	.63					.15							.17	.46			T.		.17	.17	.03	T.	.11	.02	.01	.24	T.	T.	3.47	
Seattle.	Puget Sound.	.25	.37	.21	.21	.50	.19	.05	.31								.30	.28	.03			.11	.81	.70	.05	.17	.72	.04	.56	.04	.24	.15	8.25	
Sedro Woolley.	do.	.08	.49	.16		.40	.43	.52	.57	.31		.00					.04	.18		.02	.02		.06	.06									0.79	
Sixprong.	Columbia.		.14	.13			.02	.06	.12								.09	.08				.06	.28	.40	.30	.30		1.20	.45	.27	.85	.15	9.65	
Skagit Power Dam.	Puget Sound.		1.14	.39	.34	.85	.39	.74	.79	.34			.15			.18	.26	.05			.01	.11	.35	1.02	.62	.05	.01	.16	.03	.10	.06	.20	5.51	
Snohomish.	do.	.08	.02	.45	.04	.02	.16	.32	.62							.05	.18	.05				.02	.37	.90	.10		.33	.45	.12	.53	.03		5.96	
Snoqualmie.	do.	.26	.47	.37	.24	.42	.10	.28	.03	.01						.05	.18	.05																
Snoqualmie Pass.	Yakima.																				T.		.27	.23									1.27	
Snyder's Ranch.	Columbia.	T.	.07	.12	.10	T.				.30							.08	.09			.10	.04	.38	1.69	.56	.01	.83	.24	.42	.77	.27	.16		
South Bend.	Coast.	.18	.77	.29	.78	1.79	.28	.19	.77	.12						.01	.01	T.			T.	T.	.23	.11	T.		.02	.01	.18				1.50	
Spokane.	Spokane.	.02	.18	.36	T.	T.		.11	.27			T.				.17	.38	.08			T.	.01	.09	.17	.14	.03	.13	.01		.02	.16		3.57	
State University.	Puget Sound.	.02	.58	.25	.30	.35	.11	.25	.32							.02	.11						.12	.09	T.				.04	.18			1.49	
Stoke's Ranch.	Columbia.		.19	.08	.12	.19	T.		.06	.13	.18																							
Sullivan Lake.	Pend Oreille.																																5.31	
Sumner.	Puget Sound.	.24	.31	.39	.40	.33	.21	.36	.60	.03						T.	.74	.06			.02		.47	.45	.19	.02	.11	.12		.20	.06		0.68	
Sunnyside.	Yakima.	.04	.18				.02	.07								.02	.02	.19		.02			.12										5.80	
Tacoma.	Puget Sound.	.20	.28	.29	1.11	.32	.43	.08	.83	.01						.26	.62				.01	T.	.64	.22	.14	T.	.09	T.	T.	.22	.05		12.25	
Tatoosh Island.	Coast.	.58	.36	.28	1.14	.70	2.21	.13	.20	.06		.17	.01		T.	.73	.71				.11	T.	2.35	1.10	.08	.21	.27	.10	T.	.55	.14		1.71	
Triton.	Yakima.	.11	.07	.24	.10			.10	.08							.07	.18		.12	.04	.02		T.	.05	T.			.03					0.73	
Touchet.	Columbia.		.14	.15	T.			.05	.07						T.	.07	.06	.12					T.	.05	T.								3.91	
Touchet Ridge.	do.		.18	.20	.27		.16		.75							.20							.45	.10					1.30	.30			1.72	
Trinidad.	do.	.10		.35				.11	.05							.05	.20						.40											
Twin Sister Lakes.	Yakima.																																	
Upper Cleelum Valley.	do.																																	
Vancouver.	Columbia.	.33	.57	.28	.06		.11	.14	.32	.02						.08	.32				.03	T.	.28	.30	.11	T.	.12	.03	T.	.34	.08	.07	3.59	
Vashon Island.	Puget Sound.	.50	.08	.50	.18	1.12	.24	.26	.60	.02	T.					.31	.52	.07	T.			.03	T.	.25	.50	.07	.01	.15	.02	.04	.25	.02		5.74
Wahluke.	Columbia.																																1.19	
Wallace.	Okanogan.		.05	.22		.17	.01	.16	.20							.12							.09	.10									0.53	
Walla Walla.	Columbia.	T.	.07	.14	.06		.02	T.	.08						T.	.10	T.					.05	.32										0.98	
Waterville.	do.	T.	T.	.25			T.	.08								T.	.25							.22	.08								T.	0.96
Wenatchee, near.	do.	T.	.03	.23			T.	.05	.10							T.	.25							.15									1.12	
Wilbur.	do.			.40		.02	T.		.40																									10.09
Yale.	do.	.40	.80	.50	.40		.30	.44	.85	.09						.15						.33	.10	.82	1.20	.90	.03	.60	.35	.40	.90	.26	.27	0.40
Zindel.	Snake.		T.	.40																		T.												
Oregon.																																		
Albany.	Willamette.	.02	.30	.54	.34	.08	T.	.16	.22	.10			.01			.10	.30	.46			.05				.04	.26	.04		.16		.68	.08	3.89	
Ana River.	SE. Drainage.							.02			.05					T.					.10	T.			.15	.10	T.						0.12	
Ashland.	Rogue.		T.	.90				.47	.20	.25	.08					.70	.37	.05				.46	.14	.75	.74	.27	.01	.85	.22	.40	.74	.38	.20	10.90
Astoria.	Columbia.	.29	.86	.36	1.08	.63	.84	.25	.50	.07				.04	T.		.24	.05															0.43	
Bagleys Ranch.	Snake.			.27																														
Baker City.	do.													</																				



Stations.	River basins.	Day of month.																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Oregon—Continued.																																		
Grants Pass.	Rogue.	.01	1.87	.15			.14	.02	.89	.13	.30	.09			.02	.12		.10	.02	.06	.02		.01	.22				.11			.06	.01	4.44	
Grass Valley.	John Day.	.10	.25		.25	.25	.25	.16	.57	.02	.09	.01					.11	.02			T.	.01	.01	.01	.10	.03		.19		T.	.82	.35	1.27	
Greenhorn.	SNAKE.	T.	.80	.45			T.	.16	.57	.02	.09	.01					.11	.02			T.	.01	.01	.01	.10	.03		.19		T.	.82	.35	3.75	
Gridstone.	Deschutes.																																1.82	
Gumboot.	SNAKE.		.38	.39					.22								.11	.03					T.	.08							.32	.23	0.78	
Gurdane.	Columbia.	T.	.34	.04			T.	.03	.14								.11	.03					T.	.04		.01					.04	T.	12.11	
Happy Home.	Umpqua.	.40	2.65	2.24	.28	.10	.16	.24	1.40		.34	.34			.40	1.40	.20		.20	.40			T.	.26		.30	T.	.10	.20	.10	.16	.24	1.08	
Hay Creek.	Deschutes.		.33	.02					.30			.07				.14	.04					T.	.14								.02	.02	5.01	
Hazeldeil.	Willamette.	.15	.71	.15	T.		.28	.72	T.	.14						.83			.21	T.			.32	T.		.45		.25	.55	.25		2.80		
Head Works.	do.	.21	.84	.61	.50	.18	.21	.09	.70	.06		.03				.23			.17	.02	.20	.55	.95	.28	.14	.50	.18	.10	.37	.28		0.40		
Heppner.	Columbia.	T.	.06	.27	.04		T.	.15								.10	T.					T.	.15							.02	T.	0.70		
Hermiston.	Umatilla.	T.	.06	.10		T.	.02	.06								.15		.08					T.										1.70	
Hillgard.	Grand Ronde.		.70				.15	.10								.10								.05	.10		.10	.10				.35	2.15	
Hood River.	Columbia.	.10	.60	.30	.05		.05									.70							.70	.15			.05	.05	.10			3.28		
Hoover.	Willamette.	.11	.96	1.36	.85		.11	.25	1.20	.18		.06				.45	.07		.14	.07	.11	.68	.78	.07	.32	.13		.04	.95	.39		9.21		
Howardville Station.	Grand Ronde.		.00	.48	.36			.06	.33							.08	.06		.02	.05	.30	.05	.41				.20	.06		.36	.20	3.11		
Huntington.	SNAKE.																.05					T.										.10	0.15	
Iber Mine.	John Day.		.62	.55			T.	.03	.20	.04	.07	T.				.17	.08					T.	T.											



TABLE 3.—Maximum and minimum temperatures at selected stations for December, 1910. District No. 12, Columbia Valley.

Date.	Montana.						Idaho.																							
	Kallispell.		Missoula.		Afton, Wyo.		Boise.	Bonners Ferry.		Hot Springs.		Lewiston.		Mackay.		Meadows.		Pocatello.		Salmon.		Shoshone.		Vernon.		Wallace.				
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1....	34	30	32	22	37	7	35	30	38	26	50	32	49	34	47	22	35	25	51	28	37	28	50	29	47	21	41	30		
2....	36	31	34	22	35	15	38	31	38	28	40	30	45	35	40	20	35	24	51	35	34	21	40	30	35	23	42	33		
3....	36	33	38	24	43	30	30	36	40	32	50	35	49	41	41	20	36	30	45	39	33	21	45	34	35	29	41	34		
4....	42	30	38	32	40	24	44	35	41	30	54	34	48	34	35	19	35	26	40	32	42	22	41	30	36	23	38	33		
5....	34	24	39	26	40	22	50	32	36	26	50	32	48	34	34	14	37	21	46	30	31	10	41	25	35	19	41	30		
6....	38	27	33	14	31	6	39	29	38	30	48	30	40	32	28	6	38	20	38	21	17	2	41	25	28	10	38	29		
7....	33	26	32	18	36	20	45	29	38	30	50	27	47	35	42	10	33	22	45	27	32	12	42	24	38	19	36	29		
8....	37	27	34	13	40	16	47	30	39	30	45	30	46	34	37	10	33	22	49	24	24	2	40	25	38	12	38	30		
9....	39	30	38	31	45	29	40	34	46	28	47	38	51	32	34	13	28	16	44	34	30	16	43	34	34	30	39	32		
10....	33	19	33	11	32	16	40	34	40	20	41	37	40	26	36	15	38	23	36	32	22	10	45	30	33	22	34	21		
11....	27	17	29	9	34	24	42	36	30	11	40	37	40	31	37	18	36	19	38	33	24	3	40	34	35	30	37	22		
12....	37	23	33	11	37	25	40	30	43	25	43	38	41	28	39	21	33	17	41	31	24	5	40	34	36	25	38	28		
13....	36	19	34	7	27	6	44	32	36	24	45	40	47	31	37	10	28	15	38	25	20	7	38	30	32	9	32	22		
14....	26	20	25	2	25	4	36	28	32	25	44	30	45	30	38	9	27	10	38	24	16	7	38	24	32	5	28	22		
15....	26	20	22	2	23	10	38	28	30	20	38	30	36	29	35	5	25	7	35	24	11	1	40	23	30	7	29	17		
16....	32	25	26	8	25	8	38	27	35	25	43	29	41	25	29	4	25	9	35	21	12	2	36	20	30	5	39	15		
17....	32	28	28	13	24	4	39	30	38	25	44	30	38	34	40	7	34	12	32	18	15	10	36	18	35	8	34	32		
18....	35	24	28	8	20	8	35	31	36	28	46	28	39	35	39	10	29	12	26	23	17	12	40	24	27	5	33	23		
19....	29	17	26	6	26	3	34	31	35	29	44	29	36	34	43	9	25	11	32	22	12	3	38	23	32	3	29	18		
20....	26	22	23	3	26	4	31	28	34	26	31	25	34	32	42	10	24	9	33	20	15	11	32	17	39	15	26	19		
21....	37	24	36	9	26	10	38	26	38	22	41	25	37	28	30	12	31	6	29	23	22	8	34	24	26	14	31	26		
22....	29	18	36	23	26	6	36	22	35	21	36	21	36	27	25	4	25	1	34	23	27	5	34	12	23	7	34	26		
23....	35	26	39	26	25	6	44	32	39	20	47	32	47	35	28	5	35	21	38	28	27	7	40	25	28	18	39	29		
24....	40	29	40	28	35	20	42	31	37	25	46	34	45	34	34	0	36	20	40	27	34	6	45	38	30	19	38	31		
25....	37	29	35	23	25	1	40	26	34	26	48	36	36	31	30	6	32	18	32	17	26	3	38	13	20	2	33	21		
26....	39	31	38	28	16	14	41	26	35	29	38	20	44	29	32	8	30	8	35	18	25	0	32	15	25	12	37	31		
27....	38	30	38	19	19	11	36	29	40	28	40	28	46	36	32	2	35	22	29	16	24	4	34	12	27	19	35	30		
28....	40	29	39	26	21	7	39	25	42	20	41	24	41	31	30	2	29	16	32	24	28	3	35	20	27	19	40	26		
29....	34	27	34	17	31	11	44	26	38	35	42	28	44	28	34	0	33	13	37	23	28	0	36	14	29	20	40	19		
30....	36	26	37	27	30	13	39	29	40	31	42	34	47	37	30	2	35	25	34	28	38	14	36	14	30	20	36	30		
31....	30	5	31	23	25	12	33	25	39	15	37	20	39	27	.....	1	28	13	28	17	36	10	34	18	26	17	31	22		
Mns..	34.3	24.7	33.3	17.1	29.9	8.3	39.9	29.6	37.4	25.5	43.6	30.4	42.6	31.9	35.3	9.5	31.8	16.5	37.5	25.4	25.3	4.4	38.9	24.1	31.5	15.7	35.7	26.5	26.5	

## Washington.

Date.	Aberdeen.		Blaine.		Colville.		Koramee.		Lakeide.		North Head.		North Yakima.		Odessa.		Port Crescent.		Seattle.		Sixprong.		Spokane.		Tacoma.		Tatoosh Island.		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1....	50	43	53	40	35	29	52	36	39	34	57	48	38	34	.....	.....	51	42	51	43	46	34	40	30	49	41	52	46	
2....	54	44	49	45	38	33	50	42	40	35	52	48	41	34	.....	.....	50	40	57	48	43	30	40	34	56	44	51	47	
3....	51	39	48	42	38	34	49	35	38	32	51	46	38	36	.....	.....	46	36	50	41	41	34	42	38	47	37	51	44	
4....	53	41	48	41	41	30	44	35	37	27	50	42	45	30	.....	.....	48	38	48	40	50	34	41	34	48	38	51	44	
5....	50	44	48	41	38	30	48	34	37	31	50	47	48	32	.....	.....	46	39	52	44	47	33	48	35	50	46	50	44	
6....	50	44	45	42	38	33	47	36	39	28	50	45	40	30	.....	.....	47	42	52	45	42	31	39	32	54	45	50	45	
7....	54	40	51	42	48	34	50	40	41	35	52	48	38	34	.....	.....	47	34	54	44	44	30	40	33	55	44	51	47	
8....	52	38	47	43	38	32	50	37	41	32	51	45	43	32	.....	.....	51	36	48	44	45	32	42	33	51	42	50	43	
9....	50	34	46	40	38	26	48	35	45	31	47	42	45	28	.....	.....	46	32	49	39	47	33	42	28	49	38	46	41	
10....	41	31	45	30	39	29	46	25	34	25	50	36	39	28	.....	.....	44	29	44	33	41	32	38	24	39	29	44	41	
11....	47	30	40	30	33	24	45	26	37	31	48	39	41	34	.....	.....	45	31	44	33	42	33	38	30	46	32	46	40	
12....	43	31	50	38	36	32	50	21	36	31	49	39	40	26	.....	.....	46	33	52	38	38	32	41	33	51	33	49	45	
13....	45	30	40	31	36	28	49	31	36	33	49	40	36	32	.....	.....	45	35	44	34	36	32	33	29	44	29	47	45	
14....	43	32	47	31	35	30	49	25	36	33	51	44	36	32	.....	.....	43	37	41	35	37	32	32	28	39	31	46	43	
15....	47	36	45	36	33	29	44	30	35	30	50	42	35	32	.....	.....	45	36	47	36	35	32	25	29	45	32	50	42	
16....	47	34	46	43	36	30	49	32	34	31	49	44	34	32	.....	.....	47	43	44	41	34	32	38	30	44	38	49	43	
17....	48	39	46	43	33	30	51	34	35	30	48	42	33	20	.....	.....	46	36	46	42	36	20	36	32	46	40	46	43	
18....	51	33	42	32	35	31	50	28	32	27	55	40	32	24	.....	.....	44	34	43	35	32	26	35	30	42	36	47	42	
19....	51	30	45	31	36	30	52	28	31	28	57	46	32	29	.....	.....	42	33	41	33	32	29	37	28	39	31	54	43	
20....	48	34	47	30	34	28	48	28	30	25	48	40	32	28	.....	.....	48	31	46	37	38	28	30	27	46	31	48	43	
21....	44	31	42	34	32	27	44	34	29	24	45	40	30	17	.....	.....	46	32	44	38	40	31	32	28	45	36	46	41	
22....	49	32	35	31	31	25	35	30	28	23	49	40	32	18	.....	.....	39	34	46	37	35	28	37	28	45	35	49	36	
23....	52	32	42	33	36	31	43	34	33	24	51	44	33	28	.....	.....	45	37	54	42	46	30	43	32	55	41	49	43	
24....	47	37	43	30	32	28	44	36	41	24	47	43	42	29	.....	.....	44	34	46	41	47	36	41	29	46	39	46	42	
25....	47	34	41	32	30	23	46	37	27	19	45	40	39	19	.....	.....	48	32	45	39	46	30	36	26	44	38	46	41	
26....	49	36	45	41	33	27	44	38	31	19	46	42	36	20	.....	.....	47	35	45	41	49	34	39	34	46	40	48	42	
27....	45	34	42	34	34	23	44	34	33	23	47	40	42	22	.....	.....	44	29	42	39	47	37	36	30	44	37	45	39	
28....	49	36	44	37	31	13	46	36	36	24	47	43	40	21	.....	.....	46	35	46	41	43	32	39	32	47	40	47	42	
29....	48	34	44	38	30	23	41	32	34	26	47	42	38	30	.....	.....	43	35	44	39	43	33	40	30	46	36	45	41	
30....	47	37	43	40	33	27	44	34	39	29	45	37	40	30	.....	.....	42	34	42	36	42	32	38	31	41	36	44	38	
31....	46	31	40	27	37	15	39	33	39	24	44	36	40	20	.....	.....	43	30	42	32	32	47	31	36	23	44	31	43	38
Mns....	48.3	35.5	44.8	36.3	35.4	27.6	46.5	32.6	35.6	28.0	49.3	42.3	36.7	27.2	.....	.....	45.6	35.0	46.7	39.0	41.6	31.4	38.2	30.3	46.5	37.0	47.9	42.3	



TABLE 3.—Maximum and minimum temperatures at selected stations for December, 1910. District No. 12—Continued.

Date.	Walla Walla, Wash.		Oregon.																					
			Ashland.		Baker.		Eugene.		Gold Beach.		Hermiston.		Marshfield.		Portland.		Prineville.		Roseburg.		The Dalles.		Vale.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	37	35	64	49	.....	.....	54	39	60	49	42	38	63	38	45	41	60	28	60	41	42	37	45	28
2.....	44	36	57	49	.....	.....	51	41	60	52	54	34	56	49	55	42	50	31	53	46	44	33	36	31
3.....	45	37	53	39	.....	.....	55	48	55	49	53	33	55	48	52	43	50	37	51	38	44	40	38	32
4.....	51	40	52	36	.....	.....	53	43	54	48	44	28	55	42	52	44	51	26	50	38	47	35	42	29
5.....	54	39	45	32	.....	.....	51	42	55	42	44	34	59	39	56	47	45	23	50	37	44	34	40	29
6.....	46	27	42	34	.....	.....	58	39	54	39	48	28	56	41	51	43	45	22	53	36	39	34	34	26
7.....	51	35	40	29	.....	.....	53	41	60	50	48	32	61	43	54	48	51	25	57	40	46	36	43	30
8.....	52	34	48	35	.....	.....	58	45	58	50	48	33	54	46	52	44	47	32	50	44	45	37	40	28
9.....	50	36	43	40	.....	.....	50	39	54	41	57	35	53	40	44	36	45	25	48	43	49	38	35	31
10.....	37	29	45	40	.....	.....	44	38	54	42	42	22	51	38	38	34	40	32	47	42	44	31	35	31
11.....	42	32	49	43	.....	.....	40	38	54	48	44	30	50	46	45	34	48	35	50	45	46	39	45	35
12.....	41	31	54	38	.....	.....	46	40	51	38	42	26	60	41	44	34	50	27	49	44	44	31	43	32
13.....	36	32	53	35	.....	.....	52	37	51	40	41	36	51	43	46	35	50	25	47	40	40	38	41	36
14.....	34	32	45	30	.....	.....	45	36	52	41	41	35	47	39	45	38	42	32	47	38	41	37	42	32
15.....	37	33	48	32	.....	.....	40	35	62	49	40	34	58	43	46	39	47	23	51	39	41	37	37	33
16.....	35	31	46	39	.....	.....	57	37	56	46	39	31	51	45	43	38	40	25	48	43	40	33	36	33
17.....	35	33	44	37	.....	.....	59	35	52	39	37	32	53	37	45	38	39	31	50	42	37	32	45	23
18.....	34	31	43	29	.....	.....	50	33	56	35	37	31	62	36	46	36	42	26	47	36	38	33	44	24
19.....	32	29	40	26	.....	.....	45	31	52	33	38	31	61	31	44	36	36	20	41	35	38	34	34	32
20.....	40	30	42	24	.....	.....	45	29	51	44	39	31	49	41	39	31	42	12	44	34	39	33	33	30
21.....	43	34	36	33	.....	.....	49	32	48	35	46	22	46	32	41	32	37	16	41	34	47	32	40	24
22.....	34	27	38	30	.....	.....	45	32	50	32	37	24	51	32	47	36	36	19	48	34	40	30	33	19
23.....	56	33	44	39	.....	.....	50	38	55	37	34	28	57	45	55	44	53	25	54	34	48	36	39	29
24.....	45	34	40	34	.....	.....	60	44	50	33	52	34	48	37	48	43	42	23	48	38	49	36	44	26
25.....	45	34	39	32	.....	.....	57	36	53	35	49	23	52	31	45	38	40	18	44	34	48	32	47	26
26.....	48	38	35	26	.....	.....	43	35	50	32	48	36	44	27	43	38	42	18	47	37	48	34	40	27
27.....	46	36	36	30	.....	.....	50	32	51	37	52	34	50	37	48	40	42	18	46	31	48	36	44	20
28.....	49	38	34	24	.....	.....	50	34	52	36	50	29	50	30	50	41	38	28	41	32	50	40	40	24
29.....	52	38	38	28	.....	.....	45	35	50	36	43	29	49	35	47	37	36	21	50	34	46	35	43	28
30.....	46	36	40	32	.....	.....	46	39	48	41	45	22	47	38	43	38	42	25	47	37	46	35	42	25
31.....	41	29	40	34	.....	.....	43	34	48	38	52	31	49	32	45	37	35	25	43	37	45	35	37	24
Means.....	43.2	33.5	44.3	34.1	.....	.....	49.8	37.3	53.4	40.9	44.8	30.8	53.2	38.8	46.9	38.9	43.9	24.9	48.5	38.2	44.0	34.9	39.9	28.3



**WEATHER, FORECASTS, AND WARNINGS FOR THE MONTH.**

By EDWARD H. BOWIE, In charge, Forecast Division.

The barometric pressure at the opening of the month was much above normal in high latitudes, being abnormally so in Siberia, the region of Iceland, and over Alaska. Pressure was below normal over the Atlantic Ocean in middle latitudes and over the Pacific Ocean—a pressure distribution which had prevailed during the last decade of November when stormy weather prevailed over southern Europe and off the east coast of the United States. On the 2d and 3d a decided fall in pressure set in over the eastern portion of the Atlantic Ocean, and following it, unsettled, stormy weather prevailed over the British Isles and western Europe. On the 8th a decided storm area was immediately west of the British Isles, and on that date the pressure fell to 28.52 inches at Valencia, Ireland, and gales and general rains followed over the British Isles, the North Sea, and western Europe. On the 9th and 10th stormy weather continued over the eastern portion of the North Atlantic Ocean and western Europe, and whole gales causing the loss of a number of lives and ships were reported. Stormy weather continued over the British Isles and western Europe until the 14th, caused by a disturbance which moved northeastward to the north coast of Scotland, where it decreased in intensity, but on the 16th another disturbance, pressure 28.68 inches at its center, appeared on the west coast of Ireland and passed thence over the North Sea on the 17th. These disturbances over the eastern portion of the Atlantic Ocean resulted in a prolonged period of stormy weather over practically the whole of Europe and the British Isles, and press reports were to the effect that much damage to shipping from gales and to interior districts by floods had resulted.

On the 8th, 9th, and 10th the pressure increased decidedly over Alaska, and on those dates the lowest temperatures of the season were recorded in that region. On the 9th, the lowest temperature at Tanana was 46 degrees below zero. Low temperatures continued in the interior of Alaska until the 15th, when a marked increase in temperature and rapid fall in pressure set in over that region.

In the United States the month of December opened with a general cold wave prevailing in all districts east of the Rocky Mountains, and on the 1st frosts and freezing temperatures were reported from the Gulf States and northern Florida, and snow continued in the Great Lakes region, the upper Ohio Valley, and the North Atlantic States, attended by strong north to west winds. Warnings of the occurrence of these winds were sent to stations on the Great Lakes and ports on the North Atlantic coast. Freezing temperatures were reported from northern Florida and frosts from central Florida on the 2d, 3d, and 4th, warnings of which were issued in ample time to protect truck and orchards.

The following weekly forecast was issued Sunday, December 4:

A continuation of low temperatures over the country east of the Rocky Mountains during the greater part of the week beginning December 5 is indicated by the International Weather Charts. West of the Rocky Mountains the weather will be unsettled without marked temperature variations but with rains in the Pacific States and the northern plateau region during the next several days. A disturbance that was over the Rocky Mountain region Sunday will advance eastward and reach the Atlantic States by Monday night or Tuesday. During its passage eastward this disturbance will cause snow in northern, rain or snow in central, and rain in southern districts from the Mississippi Valley eastward during the first part of the week. Following this disturbance a general change to colder weather will spread eastward and southward as far as the Gulf States by Monday night or Tuesday. Another disturbance will appear on the north Pacific coast Tuesday, cross the Middle West Wednesday or Thursday, and the Atlantic States during the latter part of the week.

On the 3d a disturbance appeared on the north Pacific coast; on the 4th its center was over Colorado, on the 5th over

Mississippi, and on the 6th off the Virginia coast, whence it passed northeastwardly to the Canadian Maritime Provinces. This was the first widespread storm of the winter, causing snow in practically all districts, except the Gulf States, from the Rocky Mountains to the Atlantic coast, and on the 5th and 6th heavy snows in the upper Ohio Valley, the Middle Atlantic States, and southern New England. On the morning of the 5th, when the storm center was over Mississippi, heavy-snow warnings were sent throughout the regions where heavy snows fell, and storm warnings were displayed on the Gulf coast, the Atlantic coast from Jacksonville to Boston, and on the Great Lakes except Superior. This disturbance increased in intensity during its movement northeastward from Mississippi to the Middle Atlantic coast, and high winds occurred on the Middle Gulf coast, the entire Atlantic coast north of Jacksonville, and over the southern portion of the Lake region. In connection with this storm the following report from the official in charge, local office, Weather Bureau, Pittsburg, Pa., is of interest:

On the 5th a heavy snow warning was issued to all transportation lines operating in the Pittsburg district. The different lines got together crews ready to operate the snow machines and during the night following, while the snow was falling heavily, started the machines to work. The snowfall in the mountain districts amounted to from 10 to 15 inches, and by acting promptly on the information furnished by this office the transportation companies were able to keep their lines open with very little inconvenience or loss of time in the operation of the trains.

Following this disturbance a decided change to colder weather spread southward over the Gulf States to Florida, where freezing temperature was reported in northern portions the night of the 6th and on the night of the 7th as far south as Arcadia. Ample warnings of the approach of this cold wave were given.

The season for the display of storm warnings on the Great Lakes closed at the termination of December 6, 1910. An Associated Press report of the 13th stated:

There were fewer disasters on the Great Lakes during the season just closed than during the season of 1909. Last year there were 128 lives lost, a much higher toll than for 1910. The worst disaster of the year was the sinking of car ferry No. 18, of the Pere Marquette Railroad, off Ludington, Mich., with the loss of more than a score of lives. The greatest monetary loss of the 1910 season occurred when the steamer *W. C. Moreland* was stranded off Eagle River Reef, Lake Superior. The loss to the hull was \$420,000 and to the cargo \$40,000. There were eight important fires, accidents, and wrecks during the year. The total resulting loss was \$1,500,000.

Another disturbance appeared in the Northwest on the 6th and moved thence eastward along the northern border, attended by snow from the upper Mississippi Valley eastward over the Great Lakes and the North Atlantic States during the 7th and 8th.

On the 7th the snow over the lower Lake region was attended by strong southwest shifting to northwest winds. During the 8th, 9th, and 10th, the coldest weather of the season prevailed in the Eastern States, and frosts occurred as far south as central Florida.

On the 8th, a disturbance appeared in the extreme Northwest; on the 9th it was over the northern Plains States; and on the 10th it covered the Mississippi Valley. On the latter date snow fell in the Lake region and the Ohio Valley and at scattered points in the upper Mississippi Valley. This disturbance was attended by a marked rise in temperature during its passage from the Northwest to the Atlantic coast, and on the night of the 10th and on the 11th snows fell in the Lake region and the Middle Atlantic and New England States.

The following weekly forecast was issued Sunday, December 11:



Cold weather will continue the first part of the coming week throughout the northern and central districts east of the Rocky Mountains and in the East Gulf and South Atlantic States, followed by a change to considerably higher temperature on or after Wednesday the 14th. No unusually low temperatures are probable west of the Rocky Mountains during the next several days. The principal disturbance of the week will appear on the Pacific coast Monday or Monday night, cross the Middle West Tuesday or Wednesday and reach the Atlantic coast by Thursday. This disturbance will be attended by general precipitation, which will be in the form of rain in southern and snow and rain in northern and central districts.

Following the storm that crossed the country, 8th to 11th, a pronounced area of high pressure appeared in the Northwest on the 10th and advanced thence to the Southeastern States by the 14th, accompanied by much colder weather in all districts east of the Rocky Mountains. On the 13th the pressure fell rapidly in the Northwestern States and on the 14th an extensive area of low pressure was central in the Hudson Bay region. This disturbance was attended by westerly gales over the Great Lakes, and on the morning of the 14th southwest storm warnings were ordered for the Atlantic coast from Sandy Hook to Eastport.

A marked rise in temperature set in over the Northwestern States on the 13th and this change to warmer weather overspread all sections east of the Rocky Mountains in the ensuing 36 hours. On the 15th the center of this low-pressure area moved to the lower Lake region and on the morning of the 16th its center was off the New England coast, whence it moved rapidly eastward to the Banks of Newfoundland. This disturbance was attended by west and northwest gales from Norfolk to Eastport and a number of vessels were wrecked off the coast of New England. Storm warnings were displayed 24 hours in advance of the occurrence of these destructive winds. The highest velocities reported were 60 miles an hour at New York City and Block Island the night of the 15th. Following this storm area a cold wave developed north of the Great Lakes and quickly overspread the Lake region, the upper Ohio Valley, and the Middle Atlantic and New England States the afternoon and night of the 15th. Cold-wave warnings were issued for these regions the morning of the 15th.

The following weekly forecast was issued Sunday, December 18:

The general barometric pressure distribution over the Northern Hemisphere is such as to indicate that the coming week will be one of moderate temperature for the season in practically all parts of the country. A disturbance that covered the Great Lakes Sunday will move eastward and cause snow in that region and snow or rain in the Middle Atlantic and New England States Monday. Another disturbance will appear in the Northwest Monday night or Tuesday and move thence along the northern border and reach the St. Lawrence Valley Thursday; the precipitation attending this disturbance will not be general. In the Southern and Western States the week will be one of generally fair weather.

On the 18th pressure fell rapidly over the Western and Northwestern States and on the 20th a well-defined disturbance was over the Great Lakes, whence it passed slowly eastward to the New England coast on the 21st. This disturbance was attended by general precipitation from the Mississippi Valley eastward, and was followed by a change to considerably colder weather, without, however, the characteristics of a cold wave. On the 21st frost occurred in northern Florida and again on the 22d in northern and central Florida, the temperature dropping to 34 degrees as far south as Arcadia. Temperatures on the morning of the 22d were below zero in northern New England and extreme northern New York. Strong west and northwest winds prevailed off the New England and Middle Atlantic coasts on the 21st. On the 19th and 20th the pressure fell rapidly over Alaska and on the 21st this disturbance appeared in the Northwest, whence it advanced eastward,

attended by general precipitation, and reached the Atlantic coast on the 23d. Storm warnings were ordered for the Gulf and Atlantic coasts well in advance of the storm and high winds were reported from a number of coast ports. The highest wind velocity reported was 52 miles an hour from the east at Pensacola on the night of the 22d. A change to much colder weather followed this disturbance, and cold-wave warnings were issued on the 23d for the upper Mississippi Valley, the upper Lake region, and on the 24th for northern New York and northern New England.

The following weekly forecast was issued Sunday, December 25:

The coming week will open with cold weather Monday in the Eastern States and moderate temperatures elsewhere during the next several days. A disturbance of moderate intensity that is now in the Southwest will advance eastward and reach the Atlantic States Tuesday. It will be preceded by rising temperature and attended by unsettled weather with rain or snow in Northern and Central States east of the Rocky Mountains. The principal disturbance of the week will reach the Pacific States Tuesday or Wednesday, cross the middle West by Thursday, and advance to the Atlantic States Friday or Saturday. It is probable that this disturbance will be attended by general precipitation and be followed by a pronounced change to colder weather. This cold wave will appear in the Northwest Wednesday or Thursday and advance thence eastward to the Atlantic coast and southward to the Gulf of Mexico by the close of the week.

The pressure remained low in the middle West and Southwest on the 26th and 27th and on the latter date a well-defined disturbance was central over the southern Plains States, which moved to Indiana on the 28th and to the St. Lawrence Valley on the 29th, attended by rains in the middle Plains States, the Ohio and middle Missouri valleys, and rain and snow in the Lake region and the New England States. Another disturbance developed over Texas on the 28th and it caused widespread precipitation from the Plains States eastward from the 29th to 30th. This in turn was followed by a pronounced change to colder weather, which appeared in the Northwest Wednesday and by Thursday night had overspread the Plains States and the Mississippi Valley. Cold-wave warnings were issued the morning of the 29th for Minnesota, Wisconsin, eastern Iowa, northern Illinois, Kentucky, western Tennessee, and the middle Gulf States, and storm warnings were displayed on the Gulf coast at Galveston and from Mobile to Carrabelle.

The month closed with cold weather in New England and in the Northwest.

*Average temperatures and departures from the normal.*

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since Jan. 1.	Average departures since Jan. 1.
New England.....	12	23.9	-5.5	+ 9.2	+0.8
Middle Atlantic.....	15	29.0	-5.9	+ 4.5	+0.4
South Atlantic.....	10	42.3	-4.8	- 0.6	0.0
Florida Peninsula *.....	8	55.5	-5.0	-10.9	-0.9
East Gulf.....	11	46.0	-3.1	- 4.2	-0.3
West Gulf.....	10	49.4	+0.9	+13.1	+1.1
Ohio Valley and Tennessee.....	13	31.3	-5.8	- 4.5	-0.4
Lower Lakes.....	10	22.5	-6.8	- 1.2	-0.1
Upper Lakes.....	12	21.2	-3.1	+17.0	+1.4
North Dakota *.....	9	12.7	+0.1	+26.5	+2.2
Upper Mississippi Valley.....	14	25.5	-1.9	+ 9.1	+0.8
Missouri Valley.....	11	27.7	+0.2	+21.0	+1.8
Northern slope.....	9	26.6	+2.9	+30.0	+2.5
Middle slope.....	6	35.2	+2.2	+27.3	+2.3
Southern slope *.....	8	41.8	+0.9	+19.3	+1.6
Southern Plateau *.....	11	43.2	+2.7	+21.0	+1.8
Middle Plateau *.....	10	30.8	+3.4	+22.8	+1.2
Northern Plateau *.....	10	32.3	+1.2	+13.9	+1.2
North Pacific.....	7	43.2	+1.6	+ 0.3	0.0
Middle Pacific.....	5	49.8	+1.5	- 1.2	-0.1
South Pacific.....	4	55.0	+2.3	+15.7	+1.3

\* Regular Weather Bureau and selected cooperative stations.



## Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		Inches.	Inches.
New England.....	11	2.68	76	-0.7	-0.7
Middle Atlantic.....	15	2.63	84	-0.5	-5.5
South Atlantic.....	11	1.97	54	-1.7	-9.0
Florida Peninsula.....	8	0.77	27	-2.1	-7.4
East Gulf.....	11	3.56	78	-1.0	-7.6
West Gulf.....	10	2.53	89	-0.3	-7.8
Ohio Valley and Tennessee.....	13	3.24	94	-0.2	-1.2
Lower Lakes.....	10	2.47	86	-0.4	-1.9
Upper Lakes.....	12	1.50	71	-0.6	-6.5
North Dakota.....	9	0.35	34	-0.3	-7.2
Upper Mississippi Valley.....	15	0.89	50	-0.9	-9.8
Missouri Valley.....	11	0.75	71	-0.3	-5.0
Northern slope.....	9	0.51	72	-0.2	-3.0
Middle slope.....	6	0.30	38	-0.5	-7.7
Southern slope.....	8	0.23	22	-0.8	-12.2
Southern Plateau.....	11	0.42	51	-0.4	-2.9
Middle Plateau.....	11	0.96	91	-0.1	-3.5
Northern Plateau.....	10	1.11	61	-0.7	-1.8
North Pacific.....	7	0.03	76	-1.9	-2.9
Middle Pacific.....	7	1.78	41	-2.6	-10.9
South Pacific.....	4	0.34	16	-1.8	-7.6

\* Regular Weather Bureau and selected cooperative stations.

## Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England.....	75	+ 1	Upper Mississippi Valley.....	75	- 3
Middle Atlantic.....	74	- 1	Missouri Valley.....	77	+ 2
South Atlantic.....	74	- 4	Northern slope.....	76	+ 8
Florida Peninsula.....	80	- 1	Middle slope.....	62	- 4
East Gulf.....	72	- 5	Southern slope.....	62	- 4
West Gulf.....	70	- 4	Southern Plateau.....	56	+ 10
Ohio Valley and Tennessee.....	77	+ 1	Middle Plateau.....	73	+ 3
Lower Lakes.....	80	+ 2	Northern Plateau.....	80	+ 4
Upper Lakes.....	82	+ 0	North Pacific.....	79	- 3
North Dakota.....	89	+ 10	Middle Pacific.....	68	- 1
			South Pacific.....		

## Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England.....	6.4	+ 0.3	Upper Mississippi Valley.....	5.1	- 0.7
Middle Atlantic.....	5.8	+ 0.6	Missouri Valley.....	5.1	- 0.1
South Atlantic.....	4.0	- 0.8	Northern slope.....	5.4	+ 0.2
Florida Peninsula.....	3.4	- 1.3	Middle slope.....	4.0	- 0.1
East Gulf.....	5.4	- 0.1	Southern slope.....	5.0	0.0
West Gulf.....	5.5	+ 0.3	Southern Plateau.....	3.6	+ 0.4
Ohio Valley and Tennessee.....	6.6	+ 0.3	Middle Plateau.....	5.9	+ 1.1
Lower Lakes.....	7.7	0.0	Northern Plateau.....	7.8	+ 1.0
Upper Lakes.....	7.4	+ 0.1	North Pacific.....	8.4	+ 2.1
North Dakota.....	5.9	+ 0.5	Middle Pacific.....	6.0	+ 1.6
			South Pacific.....	4.9	+ 1.1

## Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Block Island, R. I.....	6	52	ne.	Mount Tamalpais, Cal.....	30	57	nw.
Do.....	15	64	nw.	Do.....	31	54	nw.
Do.....	16	60	nw.	New York, N. Y.....	15	61	nw.
Do.....	30	62	nw.	North Head, Wash.....	1	58	se.
Buffalo, N. Y.....	13	50	sw.	Do.....	5	56	se.
Do.....	14	63	sw.	Do.....	5	50	se.
Burlington, Vt.....	23	50	s.	Do.....	7	52	se.
Cape May, N. J.....	15	52	nw.	Do.....	22	54	se.
Cheyenne, Wyo.....	4	60	w.	Do.....	29	50	se.
Cleveland, Ohio.....	15	55	nw.	Do.....	29	60	se.
El Paso, Tex.....	31	53	sw.	Do.....	30	60	nw.
Fort Worth, Tex.....	6	50	nw.	Do.....	31	54	nw.
Mount Weather, Va.....	13	56	nw.	Do.....	31	52	se.
Do.....	15	52	w.	Pensacola, Fla.....	22	52	se.
Do.....	16	66	nw.	Point Reyes Light, Cal.....	16	54	nw.
Do.....	20	58	w.	Do.....	17	65	nw.
Do.....	21	58	nw.	Do.....	24	50	nw.
Do.....	22	52	nw.	Do.....	27	55	nw.
Do.....	24	56	nw.	Do.....	30	62	nw.
Do.....	25	52	nw.	Do.....	31	65	nw.
Do.....	30	68	nw.	Southeast Farallon, Cal.....	31	51	n.
Mount Tamalpais, Cal.....	16	54	n.	Tatoosh Island, Wash.....	3	62	s.
Do.....	17	59	ne.	Do.....	5	54	se.
Do.....	27	60	nw.	Do.....	19	52	ne.

## RIVERS AND FLOODS, DECEMBER, 1910.

By Prof. H. C. FRANKENFIELD, in charge of River and Flood Division.

There were no floods during the month, and river stages did not vary greatly from those that prevailed during the month of November. The rains and high temperatures during the closing days of the month caused a general rise in the great interior rivers, to which the melting snows in the northern districts contributed materially.

At the end of the month the Missouri River was frozen almost as far south as Omaha, and floating ice was seen at various times during the month at all places below. The ice gorged at the Wabash bridge at Hannibal, Mo., on December 9, and from that time to the end of the month the Mississippi River was closed to the northward. No ice of consequence was observed below Cairo, Ill.

The warm rains of December 29 and 30 started the ice in the Allegheny River, and it passed down into the Ohio River on December 30 with a crest stage of 17.7 feet at Freeport, Pa., 2.3 feet below the flood stage, and of 16.3 feet at Pittsburgh, Pa., 5.7 feet below the flood stage. The gorge at Wolf Creek in the lower Ohio broke at 11 a. m., December 29. The warm rains had softened the ice considerably, and no damage resulted. A gorge that had formed near the mouth of the great Kanawha broke on December 26 without damage, although for the time conditions were very threatening.

The ice in the west branch of the Susquehanna River broke on December 29 and moved out on a moderate tide, gorging again during the night of December 30 at Nippono Park, about 10 miles below Williamsport, Pa. On the north branch of the Susquehanna River the ice moved out during the night of December 30, and reached Wilkes-Barre, Pa., during the following night on an 8-foot stage of water.

In the main stream the ice remained intact, the dam at McCall's Ferry holding the ice that came from the branches, and forming a gorge that extended back to Columbia, Pa., a distance of about 18 miles.

In the Potomac River the ice impeded navigation more or less for about three weeks, but conditions did not become serious except to sailing craft.

The lower Connecticut River closed on December 11, and navigation was suspended for the season.

Reports from snowfall stations in the West show a very light fall as a rule, but in some of the northern districts east of the Rocky Mountains continuous cold weather held the snow quite solid and compact with very little melting.

On December 1 the river district of Indianapolis, Ind., was established with territory comprising the watershed of the Wabash River above the mouth of and including the White River, and the river district of Cairo, Ill., curtailed accordingly. A new river station was opened at Anderson, Ind., on the West Fork of White River, and daily observations will also be taken at Indianapolis, on the same river. Stations were also opened at Attica, Bluffton, and Logansport, Ind., on the Wabash River. Rainfall observations from the corn and wheat station at Farmland, Ind., will also be available.

Hydrographs for typical points on several principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.



## SPECIAL PAPERS ON GENERAL METEOROLOGY.

## RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

C. FITZHUGH TALMAN, Librarian.

The following have been selected from among the titles of books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Anonymous publications are indicated by a —

- Baker, T. H.**  
Records of the seasons, prices of agricultural produce, and phenomena observed in the British Isles. [720 B. C.—1883 A. D.] London. n. d. vii, 360 p. 12°.
- Bjerknes, Vilhelm, & others.**  
Dynamic meteorology and hydrography. [Pt. I.] Washington. 1910. v. p. 4°. (Carnegie institution of Washington. Pub. no. 88.)
- Buitenzorg. Institut botanique.**  
Observations météorologiques. 1908. n. p. n. d. n. p. f°.
- Chamberlin, Rollin Thomas, & others.**  
Notes on explosive mine gases and dusts, with special reference to explosions in . . . mines. Washington. 1909. 67 p. 8°. (U. S. Geological survey. Bull. 383.)
- Clarke, Frank Wigglesworth.**  
Data of geochemistry. Washington. 1908. [1st ed.] 716 p. 8°. (U. S. Geological survey. Bull. 330.)
- Commission permanente internationale d'aéronautique.**  
Procès-verbaux . . . IVème. Congrès internationale d'aéronautique, Nancy, 18-23 septembre 1909. Paris. 1909. 473 p. 8°.
- Connecticut. Storrs agricultural experiment station.**  
Weather review. General weather review and temperature curves [for 1888 to 1909, incl.]. n. p. [1910.] 13 p. 8°. (Bulletin 64. September, 1910.)
- Cox, Henry Joseph.**  
Frost and temperature conditions in the cranberry marshes of Wisconsin. Washington. 1910. 121 p. f°. (U. S. Weather bureau. Bull. T. W. B. no. 443.)
- Defant, Albert.**  
Ergebnisse der Beobachtungen des niederösterreichischen Gewitterstationsnetzes in den Jahren 1902 bis 1905. Wien. 1910. 42 p. f°. (Austria. K. k. Zentral-Anstalt für Meteorologie . . . Jahrbuch 1908. Bd. 45. Anhang.)
- Farrell, F. D.**  
Dry-land grains in the Great Basin, [Juab valley, Utah.] [Washington]. [1910]. 39 p. 8°. (U. S. Bureau plant industry. Circ. 61.)
- Fuller, P. E.**  
Use of windmills in irrigation in the semiarid west. Washington. 1910. 44 p. 8°. (U. S. Office experiment stations. Farmer's bull. 394.)
- Great Britain. Advisory committee for aeronautics.**  
Report . . . 1909-10. London. 1910. 191 p. 8°.  
Interim report. . . . 1910-11. London. 1910. 30 p. 8°.
- Great Britain. Royal observatory, Greenwich.**  
Magnetical and meteorological observations, 1908. London. 1909. 8, cxvii p. f°.
- Gulik, D. van.**  
Leerboek der meteorologie. Groningen. 1910. 199 p. 8°.
- Japan. Central meteorological observatory, Tokio.**  
Annual report. Pt. 2. Magnetic observations in 1907. Tokio. 1910. 48 p. 4°.  
Codes of meteorological wireless telegrams. Tokio. n. d. 6 p. 8°.
- Kiel. Universität. Physikalisches Institut.**  
Meteorologische Beobachtungen an schleswig-holsteinischen . . . Stationen, 1885-1908. [Kiel]. v. d. v. p. 8°.
- Maurer, Julius, & others.**  
Das Klima der Schweiz. Bd. 2. Frauenfeld. 1910. iv, 217 p. f°.
- Moreux, Th.**  
Introduction à la météorologie de l'avenir. Le soleil et la prévision du temps. Nouvelle édition revue et augmentée. Paris. 1910. 68 p. 12°.  
Le problème solaire. . . . Préface de Camille Flammarion. Paris. 1900. xvi, 344 p. 8°.
- Queensland. Water-supply department.**  
Report of the hydraulic engineer on water supply, 1910. n. p. n. d. 30 p. f°.  
Results of rainfall observations made in Queensland . . . 1897 to . . . 1906, inclusive. Brisbane. 1909. 573 p. 8°.
- Rice, George S., & others.**  
Explosibility of coal dust. Washington. 1910. 186 p. 8°. (U. S. Geological survey. Bull. 425.)
- São Paulo (Brazil). Seccão meteorologica.**  
Dados climatologicos. 1908. São Paulo. 1910. 20 p. 8°.

Scheiner, Christophorus.

Refractiones celestes, sive solis elliptici phaenomenon illustratum . . . Ingolstadii. 1617. 132 p. 8°.

Stummer, Eduard.

Niederschlag, Abfluss und Verdunstung im Marchgebiete. (Geogr. Jahresber. aus Oesterreich. Bd. 7. p. 1-36. Wien. 1909. 8°.)

Sutton, J. R.

Evaporation in a current of air. Part I. (Read July 21, 1909.) (Reprinted from Trans. Roy. soc. So. Africa, 1910, 1: 417-427.)

Working value of the wind at East London [South Africa]. Cape Town. 1910. 3 p. 8°.

Warsaw, Muzeum . . . Biuro meteorologiczne.

Instrukcja dla Stacyj meteorologicznych lacznie z obserwacyami gruntowymi i plantacyjnemi ulozona przez . . . Polskiego. Warszawa. 1910. v, 62 p. 8°.

Compte rendu. 1909. Warsaw. 1910. 38 p. 8°.

## RECENT PAPERS BEARING ON METEOROLOGY AND SEISMOLOGY.

C. FITZHUGH TALMAN, Librarian.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —.

- Aircraft. New York. v. 1. February, 1911.*
- Reber, S.** Altitude measurements and records. p. 421-424. [Describes measurements of altitudes in aviation. Illustrated.]
- Cairo scientific journal. Alexandria. v. 4. November, 1910.*
- Petrie, W. M. Flinders.** Periodicity of famines. p. 278. [Author finds a period of 47.8 years in the occurrence of famines in Egypt in former times.]
- Leslie's illustrated weekly. New York. v. 112. January 5, 1911.*
- Curtis, John William.** A year's devastating drought. p. 6.
- Nature. London. v. 85. 1911.*
- Aviators and squalls. p. 322-323. (Jan. 5.) [Abstract of article by Durand-Gréville.]
- Louis, Henry.** Colliery warnings. p. 336-338. (Jan. 12.) [Criticizes the "colliery warnings" issued by the Press association; discusses relation of colliery disasters to the barometric pressure.]
- London, Edinburgh, and Dublin philosophical magazine. London. 6 series. v. 21. January, 1911.*
- Eve, A. S.** On the ionization of the atmosphere due to radioactive matter. p. 26-40.
- Popular science monthly. New York. v. 28. January, 1911.*
- Abbe, Cleveland.** The meteorology of the future. p. 21-35.
- Royal society of South Africa. Transactions. Cape Town. 1910.*
- Howard, A. G.** The rainfall of South Africa. The possibility of prediction over the southwest. p. 363-390. (v. 1, pt. 2.)
- Roberts, A. W.** A preliminary determination of the absorption of light by the earth's atmosphere. p. 1-7. (v. 2, pt. 1.)
- Scientific American. New York. v. 104. 1911.*
- Studies of the aurora. p. 10, 21. (Jan. 7.) [Describes Störmer's work in photographing auroras.]
- Perkins, Frank C.** A unique wind vane and electric indicator. p. 70. (Jan. 21.)
- Somerville, Albert Alexander.** A freak barometer. p. 71. (Jan. 21.)
- Scientific American supplement. New York. v. 71. January 28, 1911.*
- Fog scales. p. 59.
- Terrestrial magnetism. Baltimore. v. 15. December, 1910.*
- Schmidt, Adolf.** Proceedings of the Berlin meeting of the Commission on terrestrial magnetism and atmospheric electricity on the International meteorological committee. p. 181-192.
- The work of the Magnetic commission of the International meteorological committee, 1896-1910. [By L. A. Bauer.] p. 193-206. [In effect, a plan for an independent international organization on terrestrial magnetism.]
- Humphreys, W. J.** Simpson's theory on the electricity of rain. p. 216-218.
- Western society of engineers. Journal. Chicago. v. 15. December, 1910.*
- Balcomb, Jean Bart.** The design of storm water drains in a modern sewer system. p. 699-737. [Includes extensive data of excessive precipitation at Weather bureau stations in the Mississippi valley and middle west.]



- Archives des sciences physiques et naturelles.* Genève. 4 sér., t. 30. 15 décembre 1910.
- Candolle, Augustin de.** À propos du mémoire de A. Woeikof sur l'extension du hêtre, fonction du climat. p. 588-590.
- Ciel et terre.* Bruxelles. 31 année. Décembre 1910.
- De Jans, C.** Coup d'œil rétrospectif sur les essais d'explication de la foudre globulaire. p. 499-504. [Gives copious references to the literature of ball lightning.]
- Cosmos.* Paris. 59 année. 24 décembre 1910.
- Gradenwitz, Alfred.** L'observatoire du Mont Rose. p. 713-716.
- Nature.* Paris. 39 année. 31 décembre 1910.
- Guillaume, Ch. Ed.** La symétrie des fleurs de neige. p. 78-79. [Illustrated.]
- Revue néphologique.* Paris. Octobre 1910.
- Kleist, E. V.** Mesure du vent à l'aide de cerfs-volants. p. 462-463.
- La station de géographie mathématique de l'université de Gand. p. 463-464.
- Annalen der Hydrographie und maritimen Meteorologie.* Berlin. 38. Jahrgang. 1910.
- Deutsche Seewarte.** Funkentelegraphische Verbreitung von Wetterberichten und Sturmwarnungen über Nordsee und Ostsee. p. 640-652.
- Deutsche Zeitschrift für Luftschiffahrt.* Berlin. 14. Jahrgang. 14. Dezember 1910.
- Assmann, R[ichard].** Die Gefahren der Luftschiffahrt und die Mittel sie zu verringern. p. 9-20. [Describes the proposed German weather service for aeronauts.]
- Meteorologische Zeitschrift.* Braunschweig. Band 27. Dezember 1910.
- Range, Paul.** Das Klima von Kuibis. p. 529-536.
- Süßing, R[einhard].** A. Bersons Bericht über die aerologische Expedition des Kgl. aeronautischen Observatoriums nach Ostafrika im Jahre 1908. p. 536-542.
- Wagner, A[rthur].** Über den Einfluss der mittleren Fehlers auf die wahrscheinlichste Beziehung zwischen zwei Veränderlichen. p. 542-549.
- Gorodensky, M.** Einige Bemerkungen über die Methode von G. Guilbert. p. 550-552.
- Kassner, C[arl].** Vieljährige Temperaturmittel der Schneekoppe. p. 552-554.
- Köppen, W[ladimir].** Bewölkungsminimum um Mittag. p. 555-557.

*Meteorologische Zeitschrift—Continued.*

- Hegyfoky, J[akob].** Die tägliche Regenperiode auf der ungarische Tiefebene. p. 561-564.
- Obermayer, A[ibert] von.** Zur Häufigkeit der Bewölkung. p. 564-566.
- Hann, J[ulius].** Klima von Tchentou (Tschöngtu) (Setchouen). p. 568-569.
- Mitteilungen aus den deutschen Schutzgebieten.* Berlin. 23. Band. 4. Heft. 1910.
- Ergebnisse der Regenmessungen im Jahre 1909. p. 218-223.
- Geographische Zeitschrift.* Leipzig. 16. Jahrgang. 12. Heft. 1910.
- Bach, Hugo.** Das Klima der Schweiz. Nach Jul. Maurer, Rob. Billwiller, jr., und Clem. Hess. p. 695-701.
- Physikalische Zeitschrift.* Leipzig. 11. Jahrgang. 15. Dezember 1910.
- Ewald, P. P.** Über die Messung der Vertikalkomponente des Windes mittels des Vertikalanemometers. p. 1214-1216.
- Weltall.* Berlin. 11. Jahrgang. 1910.
- Archenhold, F. S.** Über Nordlichter in der Polarregion. p. 45-47. (15 Nov.)
- Archenhold, F. S.** Nebensonnen mit farbigen Bogen. p. 61-63. (Dez. 1.) [Description of a halo observed in 1578.]
- Wetter.* Berlin. 27. Jahrgang. 1910.
- Meissner, Otto.** Bewölkung und Sonnenschein in Potsdam. (1901-1907.) (Nov.)
- Ellemann, F[ritz].** Zur Gewitterkunde Anhalts. p. 265-271. (Dez.)
- Funke, Max.** Beiträge zur Klimatologie der Vereinigten Staaten Nordamerikas. p. 276-279. (Dez.)
- Jochimsen, C.** Bestehen Beziehungen zwischen Sommer und Winter? p. 276-279. (Dez.)
- Freybe, [Otto].** Ueber die Bedeutung der Wetterkarten für den Unterricht. p. 286-288. (Dez.)
- Assmann, Richard.** Höhenrekords bei Drachenaufstiegen am Mount Weather und in Lindenberg. p. 283-286. (Dez.)
- Zeitschrift für Gletscherkunde.* Berlin. Band 5. Dezember 1910.
- Hobbs, Wm. Herbert.** The ice masses on and about the antarctic continent. p. 87-122.
- Engell, M. C.** Über die Entstehung der Eisberge. p. 123-132.
- Zeitschrift für Instrumentenkunde.* Berlin. 30. Jahrgang. November 1910.
- Duclaux, J., & Hamelin, A.** Eine Modifikation des Quecksilberthermometers. p. 340-341.



## CONDENSED CLIMATOLOGICAL SUMMARY.

In the following table are given, for the various sections of the Climatological Service of the Weather Bureau, the average temperature and rainfall, the stations reporting the highest and lowest temperatures with dates of occurrence, the stations reporting the greatest and least monthly precipitation, and other data, as indicated by the several headings.

The mean temperatures for each section, the highest and

lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperature and precipitation are based only on records from stations that have ten or more years of observations. Of course the number of such records is smaller than the total number of stations.

Temperature and precipitation by sections, December, 1910.

Station.	Temperature—in degrees Fahrenheit.						Precipitation—in inches and hundredths.					
	Section average.	Departure from the normal.	Monthly extremes.				Section average.	Departure from the normal.	Greatest monthly.		Least monthly.	
			Station.	Highest.	Date.	Station.	Lowest.	Date.	Station.	Amount.	Station.	Amount.
Alabama.....	42.9	-3.6	6 stations.....	75	5†	Riverton.....	10	21	Daphne.....	5.93	Goodwater.....	1.40
Arizona.....	47.6	+2.2	2 stations.....	83	3†	Grand Canyon.....	-6	27	Grand Canyon.....	1.48	12 stations.....	0.00
Arkansas.....	40.8	-1.7	3 stations.....	75	28	Bergman.....	9	7	Centerpoint.....	6.00	Fort Smith.....	0.59
California.....	47.8	+1.6	do.....	87	2†	Tamarack.....	3	28	La Forte.....	8.98	11 stations.....	0.00
Colorado.....	28.1	+3.7	Hoehne.....	85	4†	Fraser.....	-27	20†	Sill Mine.....	4.03	5 stations.....	0.00
Florida.....	53.5	-5.1	2 stations.....	85	31	Molino.....	19	8	Molino.....	6.57	Key West.....	0.18
Georgia.....	42.4	-4.8	Valdosta.....	83	29	Lafayette.....	12	21	Gore.....	6.79	St. George.....	0.76
Hawaii (November).....	71.7	.....	Molokai Ranch.....	90	3	Humuhua, Hawaii.....	33	29	Hakalau, Hawaii.....	23.63	Waipae Ranch.....	0.00
Idaho.....	30.3	+3.4	Salmon River Dam.....	63	1	Salmon.....	-12	18	Grand Forks.....	4.79	Edlie.....	0.31
Illinois.....	26.9	-2.8	Cobden.....	63	28	Lanark.....	-10	13	Golconda.....	3.52	Lanark.....	0.40
Indiana.....	26.8	-4.2	Mount Vernon.....	61	28	Cambridge City.....	-10	25	Rome.....	3.23	Farmersburg.....	0.58
Iowa.....	23.4	-0.2	Baxter.....	57	26	Britt.....	-14	24	Burlington.....	1.39	Le Mars.....	0.01
Kansas.....	-33.0	+0.3	Farnsworth.....	74	9	Blakeman.....	-2	6	Osage City.....	1.87	Coolidge.....	0.00
Kentucky.....	31.1	-6.8	Maysville.....	66	28	Anchorage.....	-3	25	Pikeville.....	4.80	Scott.....	2.12
Louisiana.....	52.2	+0.4	Donaldsonville.....	85	1	Tallulah.....	15	1	Donaldsonville.....	7.50	Lake Charles.....	2.15
Maryland & Delaware.....	28.9	-6.0	Porto Bello, Md.....	65	29	Oakland, Md.....	-15	17	Milford, Del.....	4.13	Delaware City, Del.....	0.90
Michigan.....	21.2	-3.6	Detour.....	46	18†	Humboldt.....	-29	25	Whitefish Point.....	4.00	Gladwin.....	0.45
Minnesota.....	14.7	-0.3	Lake Crystal.....	54	14	Warroad.....	-47	30	International Falls.....	1.30	Lynd.....	0.03
Mississippi.....	45.6	-2.2	2 stations.....	78	10†	3 stations.....	16	2†	Woodville.....	5.32	Hernando.....	2.74
Missouri.....	31.2	-2.0	Joplin.....	67	17	Ironton.....	-5	7	Caruthersville.....	5.38	Mexico.....	0.43
Montana.....	25.4	+1.0	Polson.....	62	5†	2 stations.....	-27	15†	Saltese.....	4.60	6 stations.....	T.
Nebraska.....	27.1	+0.2	Allamore.....	64	2	Anoka.....	-22	6	Fullerton.....	2.17	Kowanda.....	0.10
Nevada.....	33.1	+2.5	Las Vegas.....	91	9	2 stations.....	-8	26	Lewer's Ranch.....	4.55	Tecoma.....	0.12
New England.....	21.4	-5.4	Norfolk, Mass.....	57	30	2 stations, Vermont.....	-21	17†	Danielson, Conn.....	4.78	Jacksonville, Vt.....	0.38
New Jersey.....	26.5	-6.4	Indian Mills.....	58	29	Layton.....	-14	17	Woodbine.....	4.60	Sussex.....	1.92
New Mexico.....	26.5	+2.6	Carlsbad.....	82	4	Duke.....	-28	29	Harveys Upper Ranch.....	1.60	Many stations.....	0.00
New York.....	19.3	-6.5	Bedford.....	56	30	Canton.....	-30	31	Adams Center.....	5.90	Elmira.....	0.60
North Carolina.....	36.7	-4.8	Lumberton.....	71	29	Banners Elk.....	0	22	Rock House.....	6.90	Southport.....	0.73
North Dakota.....	12.9	-0.4	4 stations.....	56	2†	3 stations.....	-34	30	Howard.....	2.00	Amenia.....	T.
Ohio.....	25.5	-5.5	Ironton.....	63	29	Bellefontaine.....	-10	25	Youngstown.....	4.71	Defiance.....	1.31
Oklahoma.....	39.6	-0.1	Meeker.....	78	18	Hurley.....	3	23	Webbers Falls.....	2.08	4 stations.....	0.00
Oregon.....	38.6	+1.4	Fairview.....	65	10	Burns.....	0	20	Musick.....	14.89	Ana River.....	0.12
Pennsylvania.....	24.4	-6.1	Aleppo.....	68	30	2 stations.....	-14	17	Somerset.....	4.41	Everett.....	0.64
Porto Rico.....	75.4	+0.7	Arecibo.....	96	21	Cidra.....	51	1†	Cidra.....	18.91	Guánica Central.....	1.24
South Carolina.....	42.0	-4.1	Florence.....	76	29	Society Hill.....	12	21	Liberty.....	4.96	Pinopolis.....	0.66
South Dakota.....	21.9	+0.4	Fort Meade.....	63	2	3 stations.....	-20	6	Englewood.....	1.70	Belle Fourche.....	0.04
Tennessee.....	35.6	-4.3	Lynnville.....	73	27	Mountain City.....	-3	22	Decatur.....	6.55	Palmetto.....	2.34
Texas.....	50.1	+0.6	3 stations.....	89	4	Texline.....	4	30	Corsicana.....	8.65	3 stations.....	0.00
Utah.....	31.0	+2.9	Iosepa.....	74	8	Scipio.....	-13	22	Morgan.....	4.00	Tropic.....	0.09
Virginia.....	32.8	-4.4	3 stations.....	68	29	Burkes Garden.....	-9	22	Newport News.....	4.44	Ashville.....	0.63
Washington.....	36.8	+1.7	2 stations.....	60	1†	Northport.....	1	31	Goat Lake.....	13.00	Pomeroy.....	0.51
West Virginia.....	28.4	-5.5	Logan.....	72	29	3 stations.....	-8	9†	Pickens.....	6.90	Franklin.....	1.00
Wisconsin.....	17.8	-2.5	Prairie du Chien.....	45	14	2 stations.....	-27	8	Bayfield.....	2.40	Lancaster.....	0.07
Wyoming.....	24.2	+2.8	Eatons Ranch.....	67	14	do.....	-23	25	Snake River, Y. N. P.....	3.20	4 stations.....	0.00

† Other dates also.



Stations.	Elevation of instruments.			Pressure in inches.			Temperature of the air, in degrees Fahrenheit.										Precipitation, inches.	Wind.			Average cloudiness, tenths.	Total snowfall.	Snow on ground at end of month.											
	Barometer above sea level, feet.	Thermometer above ground.	Anemometer above ground.	Station, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hours.	Departure from normal.	Mean max. + mean min. + 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean wet thermometer.		Mean temperature of dew-point.	Mean relative humidity, per cent.	Total.				Departure from normal.	Days with .01 or more.	Total movement, miles.	Prevailing direction.	Maximum velocity.						
																												Miles per hour.	Direction.	Date.				
New England.																																		
Eastport	76	67	85	29.84	29.93	-.05	23.9	-5.5	40	30	30	-4	31	16	43	21	16	75	2.68	-0.7	14	10,156	w.	42	w.	30	0	7	24	6.4	8.8	12.0	4.4	8.1
Greenville	1,070	6		28.73	29.95		13.8		40	24	22	-16	31	16	34	21	16	76	3.68	-0.3	9													
Portland, Me.	103	81	117	29.85	29.98	-.05	22.0	-5.1	48	30	29	-10	31	15	43	20	14	70	3.43	-0.2	11	6,997	n.w.	42	n.w.	30	10	6	15	5.8	13.0	0.3		
Concord	288	70	79	29.65	29.98	-.08	20.6	-5.8	40	30	33	-8	10	21	27	24	18	72	2.57	-0.9	11	4,388	n.w.	30	n.w.	15	7	12	12	5.9	11.1	1.1		
Burlington	404	11	48	29.55	30.02	-.03	15.8	-6.7	39	19	24	-13	31	7	40				2.46	+0.8	16	8,897	s.	50	s.	23	1	7	23	7.8	18.0	4.3		
Northfield	876	16	60	29.04	30.04	-.01	12.4	-8.1	45	30	24	-19	11	1	51	10	9	92	1.70	-1.0	13	4,937	n.	29	n.	21	7	6	18	6.7	11.2	9.2		
Boston	125	115	188	29.85	29.99	-.06	27.5	-4.1	55	30	35	-6	31	20	43	24	18	68	2.10	-1.3	11	8,636	w.	36	n.w.	30	10	6	15	5.9	8.1			
Nantucket	12	14	90	29.98	29.98	-.07	30.8	-5.9	49	30	37	9	16	25	31	29	26	83	4.33	+0.7	16	12,008	w.	48	n.e.	7	6	13	12	6.3	7.3			
Block Island	36	11	46	29.97	30.00	-.06	29.8	-6.8	50	24	35	8	16	24	31	28	24	77	2.50	-1.3	11	15,938	n.w.	64	n.w.	15	9	6	16	6.4	7.3			
Narragansett		9					27.4	-5.1	51	30	36	1	16	19	37				3.37		9													
Providence	160	141	165	29.83	30.01	-.05	26.0	-5.6	53	30	34	3	16	18	41	23	18	73	2.53	-1.4	12	8,645	n.w.	47	n.w.	30	10	11	10	5.1	8.5			
Hartford	159	122	140	29.85	30.04	-.03	25.2	-4.6	50	24	33	3	16	18	38	22	16	70	1.93	-1.6	9	5,979	n.w.	34	n.w.	30	9	6	16	6.3	6.3			
New Haven	106	116	155	29.91	30.03	-.04	26.4	-5.4	50	24	34	5	17	19	37	23	16	64	2.30	-1.4	10	6,950	n.w.	36	n.	6	13	7	11	4.9	5.0			
Mid. Atlantic States.																																		
Albany	97	102	115	29.95	30.06	-.02	21.9	-5.6	47	30	29	-3	17	14	39	20	16	78	1.61	-1.6	6	6,655	n.w.	32	n.w.	30	9	9	13	5.8	5.8			
Binghamton	871	78	88	29.08	30.05	-.04	21.0	-6.7	48	29	29	-6	17	13	41				1.91	-0.5	10	4,777	w.	27	n.w.	30	4	5	22	7.9	9.2	0.3		
New York	314	108	350	29.70	30.06	-.03	28.0	-6.4	53	30	34	9	16	22	30	25	19	68	1.95	-1.5	9	10,555	w.	61	n.w.	15	12	8	11	5.4	8.8			
Harrisburg	374	94	104	29.70	30.12	.00	26.7	-6.1	48	30	33	8	10	21	27	24	18	72	2.57	-0.1	12	5,405	n.w.	35	n.w.	15	6	11	14	6.4	13.8			
Philadelphia	117	116	184	29.97	30.10	-.01	30.0	-5.5	54	29	36	14	16	24	30	27	22	73	2.55	-0.5	11	7,393	n.w.	37	n.w.	15	11	5	15	5.7	12.5			
Seranton	805	111	119	29.19	30.09	-.01	23.8	-6.0	50	29	31	3	17	17	40	22	18	78	3.35	+0.7	17	5,636	n.w.	38	n.w.	15	4	14	13	6.8	19.2			
Atlantic City	52	37	48	30.04	30.10	.00	30.0	-6.4	50	24	37	11	17	23	26	27	23	75	3.96	+0.2	9	6,304	n.w.	32	n.e.	6	11	7	13	6.1	7.2			
Cape May	17	9	56	30.09	30.11	.00	31.2	-6.8	50	30	37	14	17	26	23	29	25	77	2.94	-0.8	8	7,719	n.w.	52	n.w.	15	10	12	9	5.2	2.3			
Baltimore	123	100	113	29.98	30.12	-.01	31.2	-5.7	58	30	37	12	10	21	31	28	23	72	2.45	-0.6	7	5,251	n.w.	33	n.w.	15	11	5	15	5.5	12.1			
Washington	112	62	85	29.99	30.12	-.01	30.5	-5.6	62	29	38	8	10	23	29	27	21	68	2.64	-0.5	8	5,550	n.w.	36	w.	15	13	2	16	5.7	12.0			
Cape Henry	18	9	58																															
Lynchburg	681	83	88	29.37	30.14	.00	33.7	-4.6	64	29	41	14	17	26	29	24	70	2.00	-1.3	7	3,778	n.w.	24	n.w.	30	12	11	8	5.4	5.5				
Mount Weather	1,725	10	54	28.17	30.09	-.04	25.7	-5.8	57	29	32	9	16	20	30	23	19	79	3.67	+0.6	8	16,931	n.w.	68	n.w.	30	12	8	11	5.4	21.1			
Norfolk	91	102	111	30.03	30.13	.00	37.2	-5.8	66	29	44	22	14	30	31	33	28	72	3.83	+0.3	8	6,675	n.	30	n.w.	21	16	5	10	4.3	0.5			
Richmond	144	189	197	29.96	30.13	-.01	34.1	-6.9	68	29	43	14	17	26	33				2.50	-0.5	9	5,742	n.e.	35	s.w.	29	5	16	10	6.2	0.7			
Wytheville	2,293	40	47	27.66	30.15	.00	30.0	-5.3	61	29	38	9	22	22	32	26	23	81	2.12	-1.6	11	5,477	w.	30	w.	11	8	12	11	5.7	4.6			
South Atlantic States.																																		
Asheville	2,253	53	75	27.72	30.19	+0.03	32.9	-4.9	58	29	42	16	22	24	32	28	25	79	2.48	-1.6	9	8,677	n.w.	37	n.w.	15	12	11	8	5.0				
Charlotte	773	68	76	29.29	30.16	.00	38.4	-4.5	66	29	47	18	22	30	33	25	67	2.63	-1.3	8	4,768	n.e.	33	n.w.	5	14	9	8	4.5	0.1				
Hatteras	11	12	47	30.11	30.12	-.01	42.6	-6.2	65	24	50	28	22	36	30	39	37	85	2.39	-2.7	6	11,737	n.	46	n.	30	19	4	8	4.1				
Manteo	12	12	46				39.5		63	30	49	17	17	29					2.58	-2.6	5		n.w.				19	6	6					
Raleigh	376	103	110	29.73	30.14	-.01	37.9	-4.8	65	29	47	20	22	29	29	32	23	63	3.05	+0.5	10	5,967	n.w.	29	n.	30	17	5	9	3.8				
Wilmington	78	81	90	30.07	30.16	+0.01	43.0	-4.2	67	29	53	22	14	33	33	37	33	74	1.80	-1.8	5	5,782	w.	32	s.w.	6	17	8	6	3.5				
Charleston	48	11	92	30.11	30.16	+0.01	45.6	-5.7	67	29	54	28	21	38	25	41	30	76	1.21	-1.9	5	7,787	w.	36	s.	5	15	8	8	3.9				
Columbia, S. C.	351	41	57	29.77	30.17	+0.01	42.4	-4.8	71	29	50	20	3	32	31	36	29	67	1.30	-1.6	7	5,368	w.	33	s.w.	5	16	9	6	4.0				
Augusta	180	89	97	29.97	30.17	+0.01	43.4	-3.6	72	29	54	20	23	33	31	38	33	75	1.64	-1.8	7	5,023	w.	30	w.	20	14	11	6	4.1				
Savannah	65	150	194	30.11	30.18	+0.03	46.4	-4.9	71	29	56	25	2	37	28	41	38	77	1.56	-1.5	6	9,836	w.	42	w.	20	17	8	6	3.4				
Jacksonville	43	96	129	30.13	30.18	+0.04	50.8	-4.4	75	29	60	29	2	41	27	45	41	78	1.07	-1.9	7	6,637	n.w.	33	s.	6	17	10	4	3.8				
Florida Peninsula.																																		
Jupiter	22	10	46	30.11	30.14	+0.04	61.0	-5.3	82	30	70	54	2	52	27	55	52	80	1.11	-1.8	6	8,083	n.w.	34	w.	20	12	16	3	3.8				
Key West	28	10	53	30.11	30.13	+0.01	65.3	-4.8	78	18	70	51	4	60	17	61	58	79	0.18	-1.7	3	7,527	n.w.	28	n.w.	1	18	12	1	3.1				
Tampa	35	79	96	30.14	30.18	+0.04	55.5	-4.0	77	29	65	34	8	46	28	50	47	81	1.05	-1.0	4	5,443	n.	27	w.	6	19	7	5	3.3				
East Gulf States.																																		
Atlanta	1,174	190	216	28.90	30.17	+0.10	39.6	-5.0	66	29	47	19	21	32	36	35	29	70	2.79	-1.8	10	10,603	w.	47	w.	20	12	6	13	6.3				
Macon	370	78	87	29.77	30.18	+0.12	42.8	-4.0	72	29	53	21	14	33	30	36	29	70	2.77	-1.6	10	5,219	n.w.	28	s.	5	13	7	11	4.8				
Thomasville	273	6	57	29.89	30.20	+0.14	47.3	-5.2	74	29	59	24	3	35	36	40	36	76	2.86	-0.8	6	4,336	n.w.	25	s.	23	16	7	11	4.8				
Pensacola	56	140	183	30.14	30.20	+0.15	49.6	-3.2	68	5	58	26	2	43	32				5.22	+1.0	8	10,379	n.e.	62	s.e.	23	16	3	14	4.9				
Anniston	741	9	67	29.40	30.21	+0.15	39.8	-4.4	69	5	50	18	21	34	33				3.61	-0.9	9	4,671	n.	38	s.	23	4	12	15	6.8				
Birmingham	709	11																																



TABLE I.—Climatological data for U. S. Weather Bureau stations, December, 1910—Continued.

Stations.	Elevation of instruments.			Pressure in inches.			Temperature of the air, in degrees Fahrenheit.										Precipitation, inches.			Wind.				
	Barometer above sea level, feet.	Thermometers above ground.	Anemometer above ground.	Station, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hours.	Departure from normal.	Mean max. + mean min. + 2.	Departure from normal.	Maximum.	Date.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Total.	Departure from normal.	Days with .01 or more.	Total movement, miles.	Prevailing direction.	Maximum velocity.	
Upper Lake Region.																								
Alpena.	609	13	92	29.36	30.05	+ .03	21.2	-3.1	37	14	28	-2	30	15	27	30	18	82	1.50	-0.6	10	8,166	nw.	38
Escanaba.	612	49	82	29.36	30.06	+ .03	20.8	-3.2	37	14	27	-3	30	15	29	19	17	82	1.34	-0.4	13	6,915	nw.	31
Grand Haven.	632	54	92	29.36	30.08	+ .03	25.9	-4.8	40	14	32	-12	22	20	22	25	22	81	1.62	-0.9	20	6,620	se.	42
Grand Rapids.	707	127	162	29.30	30.08	+ .03	25.1	-3.7	38	27	30	14	9	20	21	24	22	85	1.37	-1.2	12	8,506	se.	38
Lansing.	863	11	62	29.10	30.08	+ .03	21.6	-1.9	39	14	26	-2	16	14	30	21	18	85	1.28	-1.2	14	5,262	sw.	24
Houghton.	668	66	74	29.28	30.04	+ .02	20.0	-0.9	38	31	26	-9	25	14	31	11	11	84	1.94	-0.5	20	4,520	nw.	26
Marquette.	734	77	116	29.22	30.05	+ .03	21.0	-1.9	39	14	26	0	30	16	23	20	17	84	3.67	+1.2	25	9,118	sw.	44
Port Huron.	638	70	120	29.35	30.07	+ .01	21.7	-5.6	38	14	28	3	30	15	28	21	18	85	2.41	+0.2	13	9,367	sw.	37
Sault Sainte Marie.	614	11	61	29.33	30.06	+ .06	15.5	-5.0	36	14	23	-13	30	8	37	15	12	82	1.33	-1.0	15	6,619	e.	37
Chicago.	823	140	310	29.20	30.12	+ .04	28.4	-2.9	43	27	32	7	12	21	20	25	20	76	1.32	-0.8	11	10,888	w.	37
Milwaukee.	681	122	139	29.34	30.11	+ .05	23.8	-2.2	41	14	30	7	9	17	27	22	18	77	0.46	-1.5	10	8,199	nw.	31
Green Bay.	617	49	86	29.38	30.07	+ .03	19.2	-2.1	36	14	26	-1	9	12	25	18	14	79	0.75	-1.1	9	8,366	nw.	36
Duluth.	1,133	11	47	28.80	30.00	+ .04	12.8	-4.9	36	14	21	-20	30	4	35	12	10	88	0.56	-0.7	10	9,621	nw.	48
North Dakota.																								
Moorhead.	940	8	57	29.07	30.14	+ .06	11.8	+1.1	40	13	21	-18	24	2	35	11	10	92	0.42	-0.3	8	6,500	nw.	27
Bismarck.	1,674	8	57	28.27	30.15	+ .07	16.2	+1.2	51	13	27	-17	31	5	40	14	12	86	0.31	-0.3	7	7,830	nw.	42
Devils Lake.	1,482	11	44	28.44	30.11	+ .05	9.8	+1.8	40	21	19	-20	29	0	42	9	7	80	0.61	+0.2	8	8,296	nw.	36
Williston.	1,872	14	56	28.55	30.14	+ .04	14.0	+0.4	40	20	24	-14	31	4	32	11	10	88	0.28	-0.3	6	3,767	nw.	30
Upper Miss. Valley.																								
Minneapolis.	918	102	208	29.15	30.10	+ .02	19.1	-0.5	45	14	27	-8	24	11	37	17	13	76	0.31	-0.6	4	8,986	nw.	37
St. Paul.	837	171	179	29.15	30.10	+ .02	19.0	-0.3	44	14	27	-8	24	11	35	17	13	76	0.30	-0.8	3	8,839	nw.	42
La Crosse.	714	11	48	29.30	30.11	+ .03	20.2	-2.6	46	14	28	-3	9	12	32	18	14	77	0.67	-0.7	10	4,159	nw.	20
Madison.	974	70	78	29.00	30.10	+ .02	20.6	-2.1	40	14	27	-3	9	14	25	18	14	77	0.56	-1.2	9	7,989	nw.	34
Charles City.	1,015	10	49	29.00	30.13	+ .03	19.4	+0.4	50	14	29	-12	24	10	33	18	14	87	0.53	-0.8	6	5,432	nw.	24
Davenport.	600	71	79	29.45	30.15	+ .05	25.1	-2.1	48	14	33	-0	24	18	32	22	18	76	0.85	-0.8	5	6,033	nw.	22
Des Moines.	861	84	101	29.19	30.13	+ .02	26.0	+0.3	53	14	34	-2	24	16	28	23	18	73	0.20	-1.1	5	6,155	nw.	31
Dubuque.	698	100	115	29.20	30.15	+ .05	23.2	-1.3	46	14	31	-2	24	16	28	21	18	82	0.57	-1.2	6	6,082	nw.	18
Keokuk.	614	64	78	29.46	30.17	+ .05	28.8	-0.6	49	17	38	-4	24	20	29	24	18	72	0.79	-1.1	5	5,906	nw.	28
Calmar.	356	87	93	29.80	30.19	+ .04	35.2	-3.3	61	28	42	18	24	28	27	31	24	67	3.39	+0.1	7	6,680	n.	35
La Salle.	536	56	64	29.56	30.16	+ .09	24.2	-3.3	45	14	31	0	12	17	30	21	17	78	1.11	-1.2	8	6,454	w.	27
Peoria.	609	11	45	29.41	30.15	+ .04	25.4	-2.7	48	14	34	3	24	17	31	23	19	78	1.25	-1.1	8	6,265	nw.	25
Springfield, Ill.	644	10	91	29.43	30.15	+ .03	28.4	-2.9	50	17	36	8	24	21	26	25	19	71	0.86	-1.6	6	7,419	nw.	28
Hannibal.	534	75	109	29.58	30.18	+ .06	29.1	-2.2	52	17	39	6	24	20	31	22	18	81	0.75	-0.9	4	6,746	nw.	30
St. Louis.	567	208	317	29.53	30.15	+ .02	32.2	-3.3	54	17	40	14	24	25	27	28	22	67	1.18	-1.0	6	8,617	nw.	29
Missouri Valley.																								
Columbia, Mo.	784	11	84	29.29	30.16	+ .04	30.3	-2.6	51	17	40	8	24	21	32	22	17	77	0.81	-1.2	3	6,506	w.	33
Kansas City.	963	161	181	29.09	30.16	+ .04	32.0	+0.5	51	16	40	12	24	24	25	28	22	70	1.25	-0.1	4	9,299	nw.	43
St. Joseph.	967	11	49	29.08	30.16	+ .04	28.9	-0.6	56	17	37	8	24	21	28	26	21	73	1.12	-0.1	4	6,421	nw.	32
Springfield, Mo.	1,324	98	104	28.71	30.16	+ .03	34.0	-1.5	58	17	42	16	1	26	27	29	24	73	0.86	-1.8	5	7,956	nw.	32
Iola.	984	11	50	29.10	30.19	+ .07	32.0	+0.1	52	16	42	12	8	23	33	23	17	77	1.14	+0.2	4	5,495	nw.	30
Topeka.	1,883	85	101	28.84	30.16	+ .04	31.4	+0.3	53	14	40	12	8	23	28	21	17	77	1.03	+0.2	4	7,142	nw.	36
Lincoln.	1,189	11	84	28.84	30.16	+ .04	27.3	+0.4	49	20	35	7	24	20	25	25	21	77	0.57	-0.1	4	7,653	nw.	40
Omaha.	1,103	115	121	28.93	30.16	+ .05	27.1	0.0	48	26	33	6	24	21	25	25	20	76	0.37	-0.5	4	6,525	n.	30
Valentine.	2,598	47	54	27.32	30.14	+ .04	26.4	+1.9	51	30	37	-2	31	16	35	23	20	83	1.22	+0.6	4	6,515	nw.	31
Sioux City.	1,135	94	164	28.88	30.16	+ .04	23.6	+1.0	44	14	32	-1	24	16	30	21	18	81	0.32	-0.4	4	9,323	nw.	44
Pierre.	1,572	70	75	28.70	30.17	+ .07	18.2	+2.5	48	14	28	-11	24	8	32	16	13	84	0.29	-0.3	5	7,390	nw.	31
Huron.	1,306	56	67	28.70	30.17	+ .07	22.0	-0.2	46	14	31	-11	24	8	32	16	13	84	0.29	-0.3	5	7,390	nw.	31
Yankton.	1,253	49	57	28.79	30.17	+ .06	26.6	+2.9	46	14	31	-11	24	8	32	16	13	84	0.29	-0.3	5	7,390	nw.	31
Northern Slope.																								
Havre.	2,505	11	44	27.37	30.11	+ .06	20.0	-1.2	45	13	29	-13	31	11	38	18	15	85	1.01	+0.4	8	6,752	sw.	42
Miles City.	2,371	26	48	27.52	30.17	+ .07	24.1	+3.1	48	20	33	-4	31	15	34	20	17	81	0.41	-0.2	5	3,647	se.	34
Helena.	4,110	8	56	25.83	30.18	+ .05	24.2	-0.6	46	23	32	-10	31	17	37	22	18	77	0.17	-0.6	3	4,436	w.	42
Kalispell.	2,962	11	34	27.01	30.15	+ .08	29.5	+5.6	42	4	34	-5	31	27	25	28	26	86	0.52	-0.1	9	2,588	w.	29
Rapid City.	3,234	46	50	26.61	30.14	+ .05	30.3	+4.3	57	14	40	-3	31	20	38	25	18	64	0.21	-0.2	5	5,054	w.	28
Cheyenne.	6,088	56	64	23.98	30.10	+ .01	31.8	+2.8	58	1	42	10	29	22	37	26	17	59	0.69	+0.4	4	8,569	nw.	60
Lander.	5,372	26	36	24.66	30.21	+ .06	26.6	+7.4	56	1	42	1	29	12	43	19	13	66	T.	-0.7	0	2,180	ne.	31
Sheridan.	3,790	9	47	26.12	30.16	+ .05	25.8	-0.4	47	14	37	-6	31	14	34	22	19	81	0.74	-0.1	2	3,628	nw.	36
Yellowstone Park.	6,200	11	48	23.90	30.23	+ .07	23.0	+1.4	40	2	31	-2	31	15	24	26	16	75	0.88	-0.9	10	5,149	s.	33
North Platte.	2,821	11	51	27.14	30.18	+ .08	30.2	+3.6	54	2	42	2	6	18	40	24	22	82	0.72	+0.2				



10

10

10

10

10



TABLE II.—Accumulated amounts of precipitation for each 5 minutes, etc., during December, 1910, etc.—Continued.

Stations.	Date.	Total duration.		Total amount of precipitation.	Excessive rate.		Amount before excessive rate began.	Depths of precipitation (in inches) during periods of time indicated.													
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
Escanaba, Mich.	25			0.52														*			
Eureka, Cal.	3			0.84														0.34			
Evansville, Ind.	29			1.44														0.31			
Flagstaff, Ariz.	19-20			0.44														*			
Fort Smith, Ark.	27			0.18														0.17			
Fort Worth, Tex.	13			0.83														0.20			
Fresno, Cal.	3			0.12														0.04			
Galveston, Tex.	22			1.17														0.82			
Grand Haven, Mich.	25-26			0.32														*			
Grand Junction, Colo.	20-21			0.42														*			
Grand Rapids, Mich.	7			0.51														*			
Green Bay, Wis.	25			0.41														*			
Hannibal, Mo.	27			0.64														0.22			
Harrisburg, Pa.	5-6			0.97														*			
Hartford, Conn.	24			1.03														0.27			
Hatteras, N. C.	18			0.59														0.27			
Havre, Mont.	4			0.34														*			
Helena, Mont.	31-1			0.15														*			
Houghton, Mich.	10-11			0.32														*			
Huron, S. Dak.	21-22			0.25														*			
Independence, Cal.	3			0.19														0.11			
Indianapolis, Ind.	28-29			0.65														*			
Iola, Kans.	27			0.79														0.40			
Jacksonville, Fla.	23			0.27														0.16			
Jupiter, Fla.	24			0.80														0.33			
Kalispell, Mont.	22-23			0.26														*			
Kansas City, Mo.	27-28			1.12														*			
Keokuk, Iowa	27-28			0.66														*			
Key West, Fla.	31			0.11														0.11			
Knoxville, Tenn.	5			2.84														0.53			
La Crosse, Wis.	25			0.30														*			
Lander, Wyo.	4			T.														T.			
La Salle, Ill.	27			0.23														0.18			
Lewiston, Idaho	3			0.27														0.12			
Lexington, Ky.	29-30			1.00														*			
Lincoln, Nebr.	4-5			0.37														*			
Little Rock, Ark.	28			1.85														0.60			
Los Angeles, Cal.	19			0.03														0.02			
Louisville, Ky.	29			1.93														*			
Lynchburg, Va.	23			0.43														0.13			
Macon, Ga.	4			0.49														0.21			
Madison, Wis.	25			0.16														*			
Marquette, Mich.	29-30			0.76														0.23			
Memphis, Tenn.	29			1.35														0.51			
Meridian, Miss.	29			0.75														*			
Milwaukee, Wis.	10			0.15														1.08			
Minneapolis, Minn.	25			0.19														*			
Mobile, Ala.	23			2.06														*			
Modena, Utah.	19-20			0.14														*			
Montgomery, Ala.	29	6.15 p. m.	D. N. p. m.	1.34	6.35 p. m.	6.55 p. m.	0.01	0.21	0.34	0.41	0.46							*			
Moorhead, Minn.	22			0.14														*			
Mount Tamalpais, Cal.	2			0.96														0.18			
Mount Weather, Va.	5-6			2.22														*			
Nantucket, Mass.	24			1.61														0.61			
Nashville, Tenn.	29			1.38														0.33			
New Haven, Conn.	24			1.07														0.34			
New Orleans, La.	23			1.20														0.88			
New York, N. Y.	24			0.82														0.18			
Norfolk, Va.	30			0.96														0.34			
North Head, Wash.	5			1.08														0.44			
North Platte, Nebr.	12			0.24														*			
Northfield, Vt.	23-24			0.75														*			
Oklahoma, Okla.	28			0.03														0.02			
Omaha, Nebr.	4-5			0.27														*			
Oswego, N. Y.	23-24			0.41														*			
Palestine, Tex.	29			0.78														0.39			
Parkersburg, W. Va.	5-6			1.00														*			
Pensacola, Fla.	29	7.10 p. m.	10.50 p. m.	1.03	9.28 p. m.	9.57 p. m.	0.22	0.07	0.13	0.31	0.45	0.54	0.59					0.17			
Peoria, Ill.	27			0.49														0.30			
Philadelphia, Pa.	24			0.97														0.12			
Phoenix, Ariz.	19-20			0.25														*			
Pierre, S. Dak.	22			0.08														*			
Pittsburg, Pa.	29-30			0.86														*			
Pocatello, Idaho.	11			0.40														0.24			
Point Reyes Light, Cal.	10			0.57														0.23			
Port Huron, Mich.	23			0.55														*			
Portland, Me.	24			1.17														0.18			
Portland, Oreg.	29			0.36														0.19			
Providence, R. I.	24			1.20														0.33			
Pueblo, Colo.	13			0.15														*			
Raleigh, N. C.	24			0.96														0.37			
Rapid City, S. Dak.	3-4			0.11														*			
Red Bluff, Cal.	3			0.47														0.13			
Reno, Nev.	10			0.42														0.20			
Richmond, Va.	24			0.73														0.26			
Rochester, N. Y.	30-1			0.83														*			
Roseburg, Oreg.	3			1.07														0.22			
Roswell, N. Mex.	15			0.01														0.01			
Sacramento, Cal.	11			0.30														0.29			
St. Louis, Mo.	27			0.58														0.27			
St. Paul, Minn.	25			0.18														*			
Salt Lake City, Utah.	11-12			0.30														*			
San Antonio, Tex.	22			0.56														0.47			
San Diego, Cal.	19			0.14														0.09			

\* Self-register not working.



TABLE II.—Accumulated amounts of precipitation for each 5 minutes, etc., during December, 1910, etc.—Continued.

Stations.	Date.	Total duration.		Total amount of precipitation.	Excessive rate.		Amount before excessive rate began.	Depths of precipitation (in inches) during periods of time indicated.													
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
Scranton, Pa.	23-24			1.12														*			
Seattle, Wash.	8			0.31														0.13	*		
Sheridan, Wyo.	4			0.44														*	*		
Shreveport, La.	29			1.31														0.49	*		
Sioux City, Iowa.	21-22			0.22														*	*		
Southeast Farallon, Cal.	10			0.40														0.22	*		
Spokane, Wash.	3			0.36														*	*		
Springfield, Ill.	27-28			0.70														*	*		
Springfield, Mo.	4-5			0.45														*	*		
Syracuse, N. Y.	29-30			0.50														*	*		
Tacoma, Wash.	4			1.11														0.42	*		
Tampa, Fla.	18			0.37														0.34	*		
Tatoosh Island, Wash.	6			2.21														0.46	*		
Taylor, Tex.	22	8.18 a. m.	3.15 p. m.	2.38	11.27 a. m.	11.57 a. m.	1.25	0.10	0.15	0.30	0.46	0.66									
Thomasville, Ga.	5			1.10														0.51	*		
Toledo, Ohio.	28			0.62														*	*		
Tonopah, Nev.	19-20			0.64														*	*		
Topeka, Kans.	27			0.71														0.29	*		
Valentine, Nebr.	4			0.61														*	*		
Vicksburg, Miss.	22			1.62														0.41	*		
Walla Walla, Wash.	2-3			0.20														*	*		
Washington, D. C.	23-24			0.90														*	*		
Wichita, Kans.	27			0.58														0.25	*		
Williston, N. Dak.																					
Wilmington, N. C.	24			0.81														0.24	*		
Winnemucca, Nev.	10			0.57														0.18	*		
Wytheville, Va.	5			1.12														0.17	*		
Yankton, S. Dak.	4			0.24														*	*		
Yellowstone Park, Wyo.	4			0.41														*	*		

\* Self-register not working.

TABLE III.—Data furnished by the Canadian Meteorological Service, December, 1910.

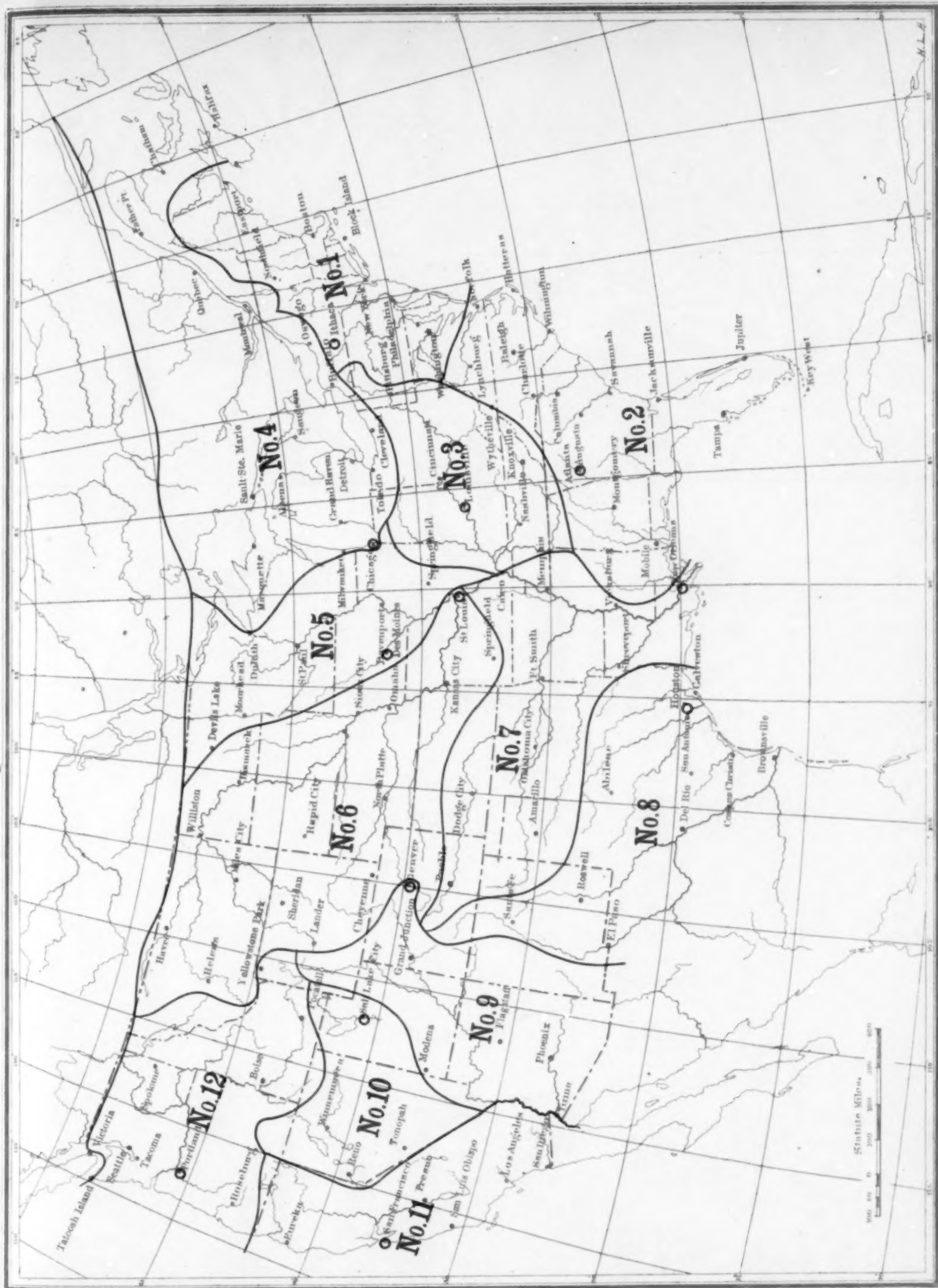
Stations.	Pressure.			Temperature.			Precipitation.			Stations.	Pressure.			Temperature.			Precipitation.				
	Station, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hours.	Departure from normal.	Mean maximum + mean minimum + 2.	Departure from normal.	Mean maximum.	Mean minimum.	Total.	Departure from normal.		Total snowfall.	Station, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hours.	Departure from normal.	Mean maximum + mean minimum + 2.	Departure from normal.	Mean maximum.	Mean minimum.	Total.	Departure from normal.	Total snowfall.
St. Johns, N. F.	29.56	29.70	-.13	29.9	+1.2	35.7	24.1	5.60	+0.57	15.0	Parry Sound, Ont.	29.32	30.06	+.05	14.9	-6.3	24.6	5.3	4.05	-0.43	40.5
Sydney, C. B. I.	29.80	29.84	-.05	28.6	+0.4	34.9	22.3	6.19	+1.56	25.5	Port Arthur, Ont.	29.32	30.06	+.07	13.0	-0.2	22.6	3.3	0.41	-0.46	4.1
Halifax, N. S.	29.79	29.90	-.06	27.1	-0.5	24.1	20.0	4.59	-0.53	12.9	Winnipeg, Man.	29.23	30.12	+0.10	5.9	+1.8	15.9	-4.1	1.87	+0.96	18.7
Grand Manan, N. B.	29.87	29.92	-.06	27.0	-1.3	34.8	19.3	3.02	-1.40	17.7	Minneapolis, Man.	28.15	30.08	+.06	5.0	-0.7	15.0	-5.1	0.76	+0.14	7.6
Yarmouth, N. S.	29.85	29.92	-.06	28.8	-1.9	35.2	22.3	2.99	-2.05	9.8	Qu'Appelle, Sask.										
Charlottetown, P. E. I.	29.82	29.86	-.08	24.0	-0.3	30.6	17.5	3.30	-0.36	13.0	Medicine Hat, Alberta.										
Chatham, N. B.	29.89	29.92	-.02	19.2	+2.2	26.9	11.6	4.09	+0.87	16.0	Swift Current, Sask.										
Father Point, Que.	29.88	29.91	-.04	15.7	+0.3	23.0	8.4	2.52	-0.31	20.4	Calgary, Alberta.	26.35	30.02	+.08	22.9	+4.7	30.7	15.0	0.17	-0.42	1.7
Quebec, Que.	29.62	29.96	-.05	12.8	-2.4	20.3	5.3	1.91	-1.78	16.7	Banff, Alberta.	25.35	30.12	+0.18	22.1	+3.0	29.6	14.6	0.90	-0.31	9.0
Montreal, Que.	29.80	30.03	.00	13.9	-4.4	20.3	7.6	2.64	-1.01	25.9	Edmonton, Alberta.	27.63	30.02	+.00	15.9	+2.8	24.5	7.3	0.93	+0.23	9.3
Stonecliffe, Ont.	29.40	30.04	+0.03	9.9	-5.1	21.1	-1.3	0.62	-1.87	6.2	Prince Albert, Sask.										
Ottawa, Ont.	29.77	30.12	+0.10	11.9	-5.1	19.7	4.1	1.82	-1.09	17.8	Battleford, Sask.										
Kingston, Ont.	29.73	30.07	+0.03	17.1	-6.6	25.7	8.4	2.34	-0.90	23.4	Kamloops, B. C.	28.73	30.03	+.09	31.6	+2.7	36.2	27.1	0.87	+0.09	7.9
Toronto, Ont.	29.66	30.06	+0.01	21.1	-5.9	28.5	13.7	1.74	-1.17	15.3	Victoria, B. C.	30.00	30.10	+0.13	42.8	+1.6	45.7	39.9	6.41	-1.57	
White River, Ont.	28.62	30.01	+0.04	5.6	-4.1	16.2	-5.0	0.24	-1.47	2.4	Barkerville, B. C.										
Port Stanley, Ont.	29.40	30.07	.00	22.3	-6.1	29.8	14.8	2.51	+0.09	23.8	Dawson, Yukon.										
Southampton, Ont.	29.30			22.2	-4.5	29.4	15.1	5.11	+1.13	51.1	Hamilton, Bermuda	29.96	30.13	+0.01	60.6	-4.1	65.8	55.4	4.38	-0.11	





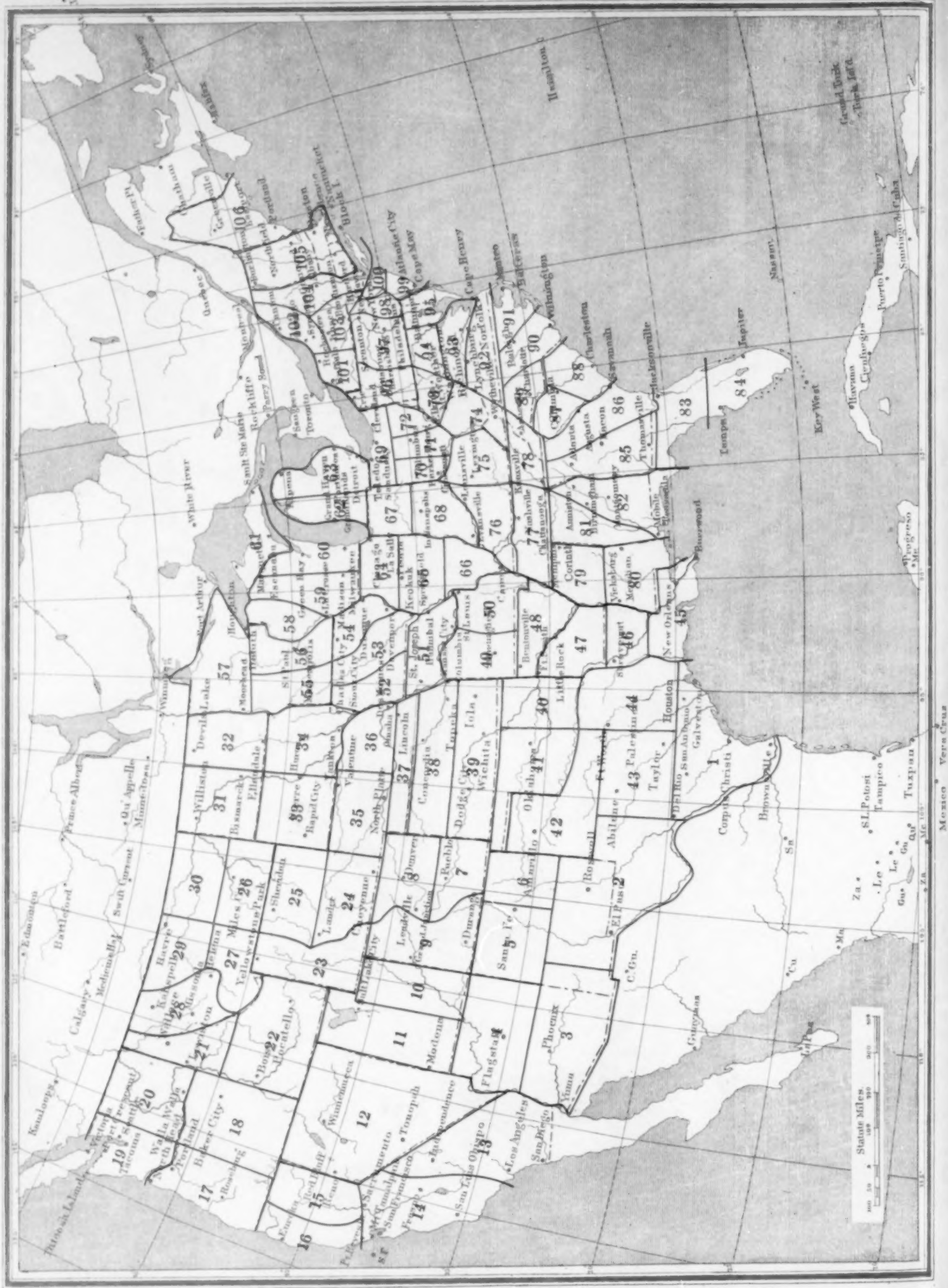


Climatological Districts of the United States.





106 Climatological Sections in the United States.



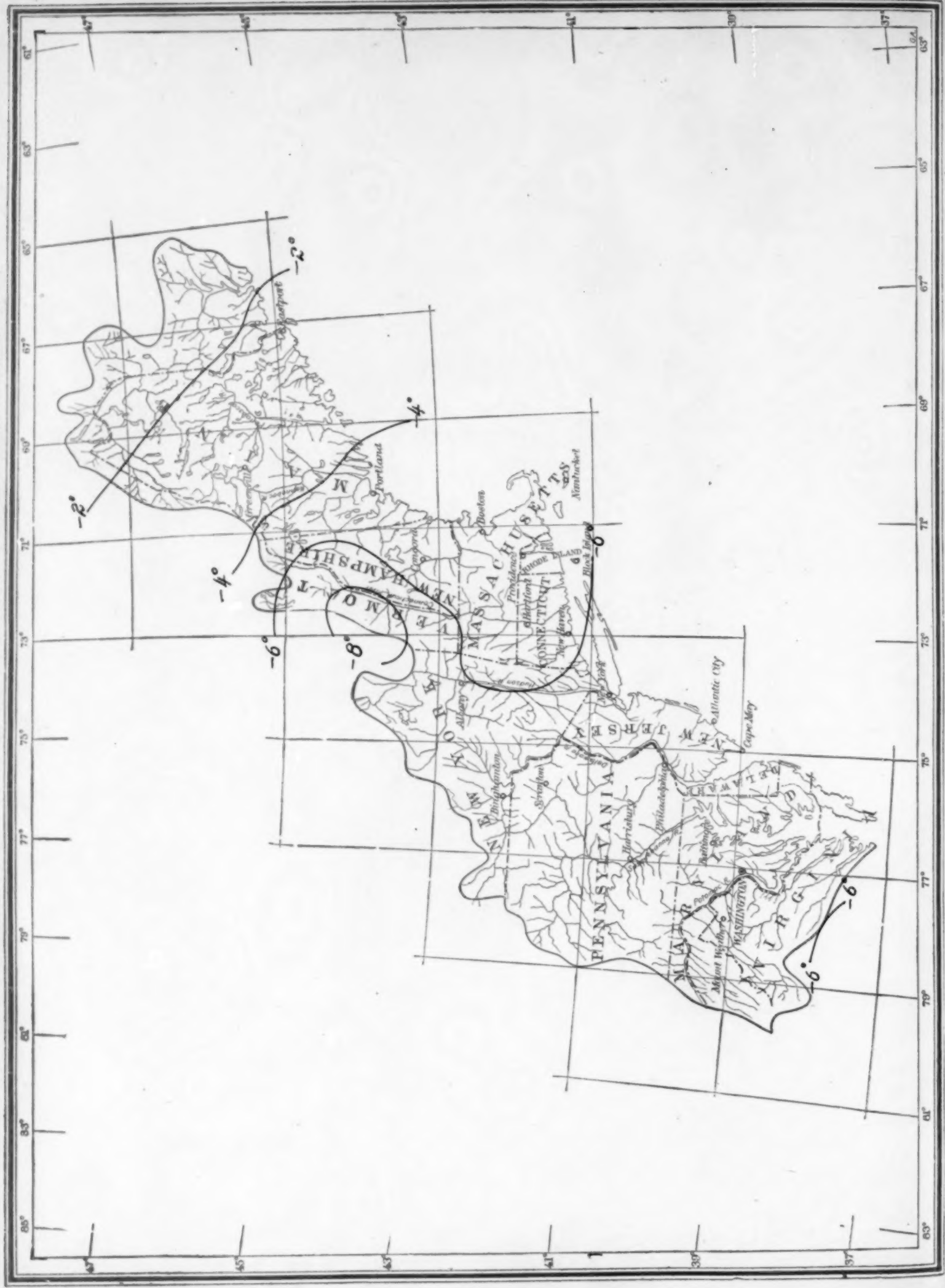


District No. 1.—Total Precipitation, December, 1910.





District No. 1.—Departure of the Mean Temperature from the Normal, December, 1910.



District No. 2.—Total Precipitation, December, 1910.



District No. 2.—Total Precipitation, December, 1910.





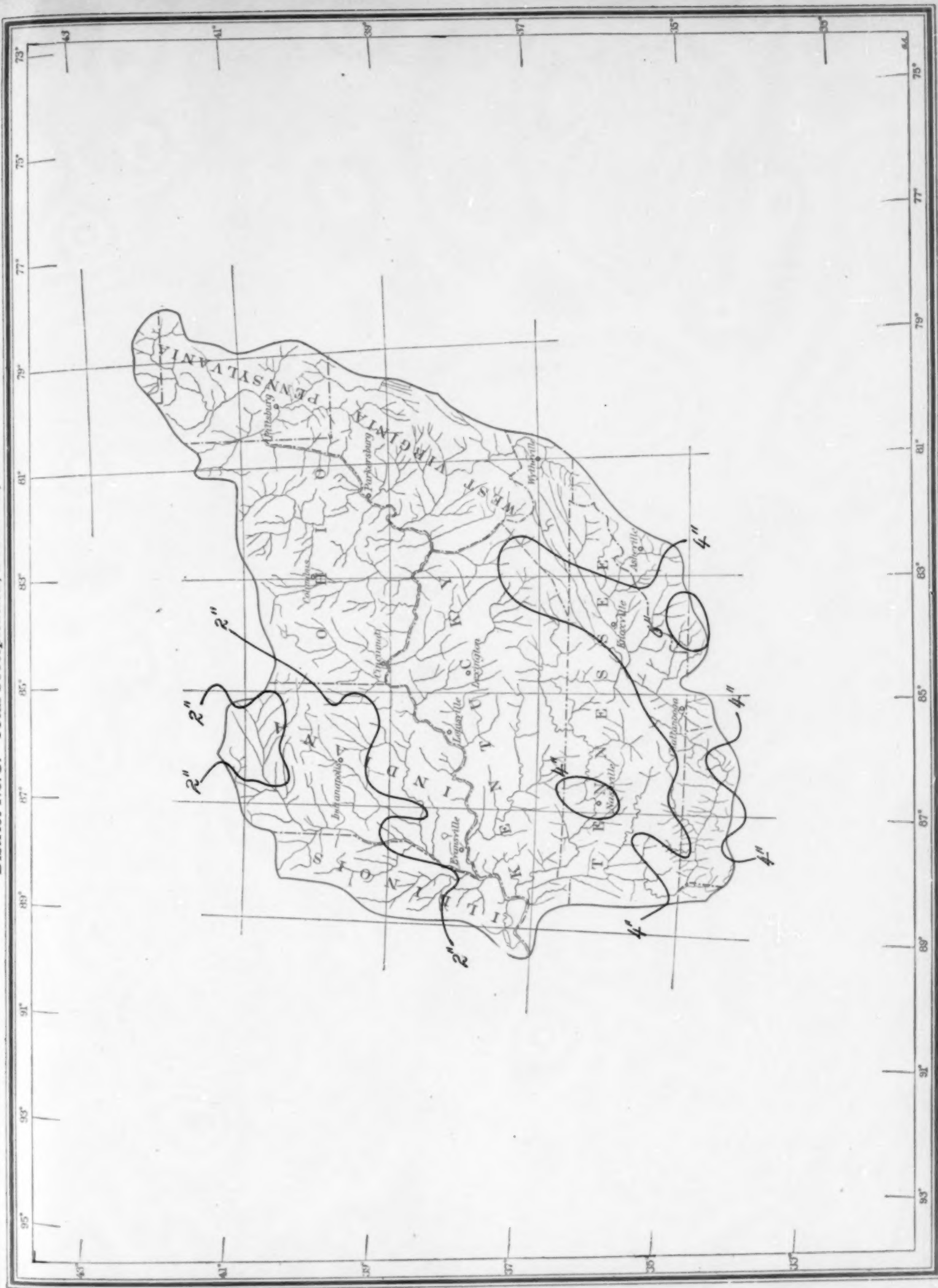
District No. 2.—Departure of the Mean Temperature from the Normal, December, 1910.



District No. 3.—Total Precipitation, December, 1910.



District No. 3.—Total Precipitation, December, 1910.





District No. 3.—Departure of the Mean Temperature from the Normal, December, 1910.



District No. 4.—Total Precipitation, December, 1910.

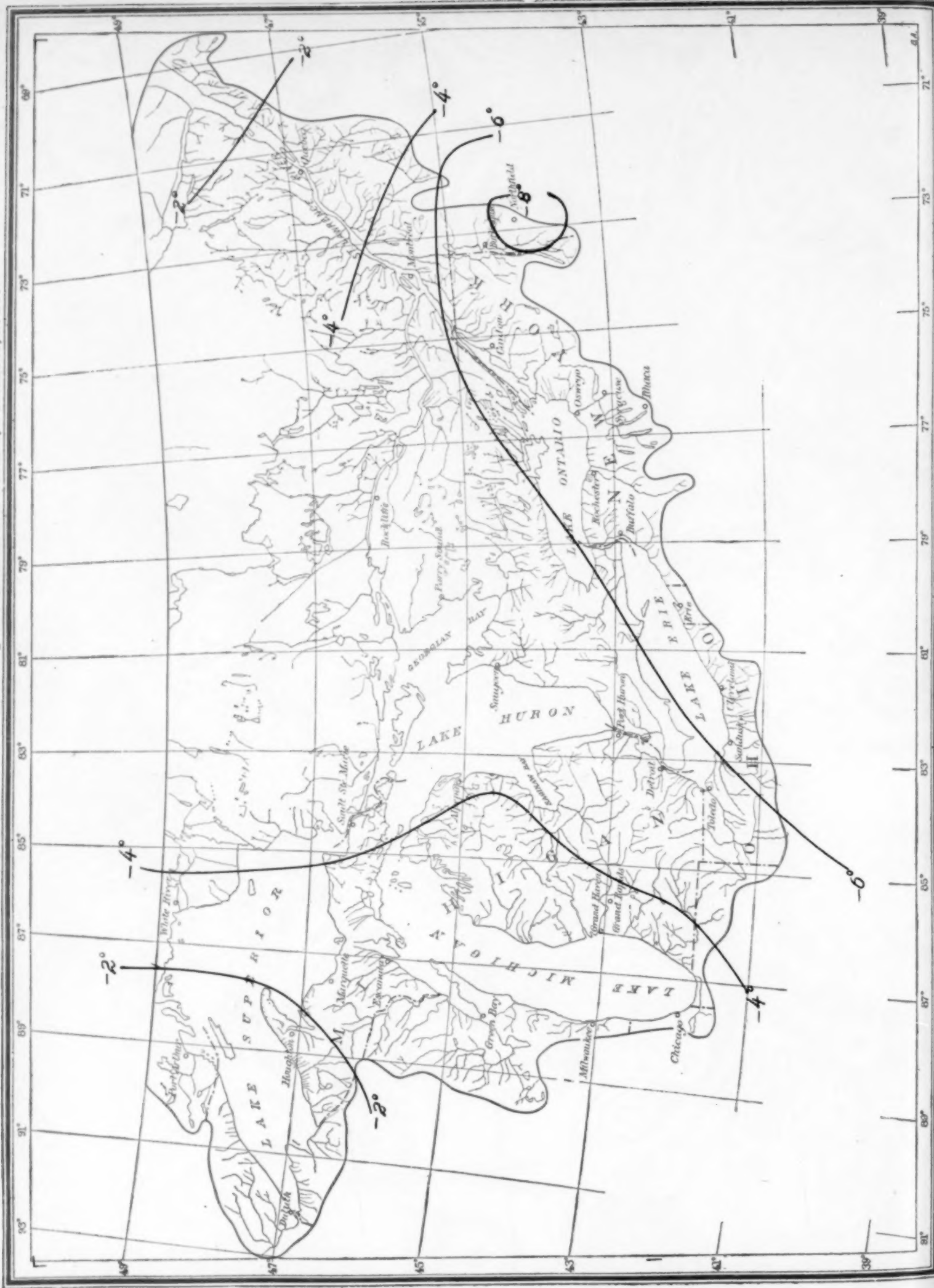


District No. 4.—Total Precipitation, December, 1910.





District No. 4.—Departure of the Mean Temperature from the Normal, December, 1910.



District No. 5.—Total Precipitation, December, 1910.



District No. 5.—Total Precipitation, December, 1910.





District No. 5.—Departure of the Mean Temperature from the Normal, December, 1910.





District No 6.—Total Precipitation, December, 1910.





District No. 6.—Departure of the Mean Temperature from the Normal, December, 1910.





72°

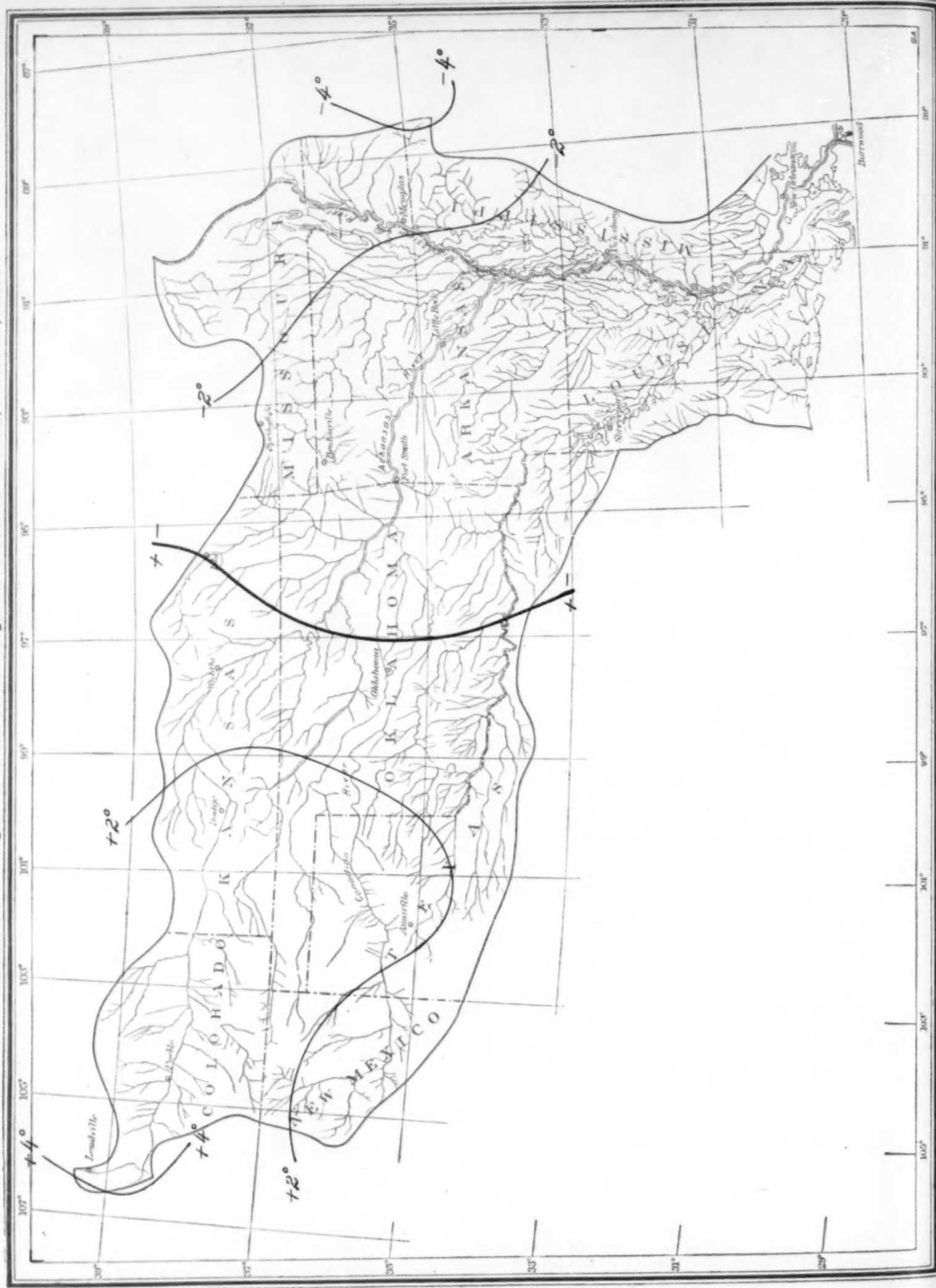
111° 109° 107° 105° 103° 101° 99° 97° 95° 93° 91° 89° 87° 85° 83° 81° 79° 77° 75° 73° 71° 69° 67° 65° 63° 61° 59° 57° 55° 53° 51° 49° 47° 45° 43° 41° 39° 37° 35° 33° 31° 29° 27° 25° 23° 21° 19° 17° 15° 13° 11° 9° 7° 5° 3° 1°

District No. 7.—Total Precipitation, December, 1910.





. District No. 7.—Departure of the Mean Temperature from the Normal, December, 1910.





District No. 8.—Total Precipitation, December, 1910.



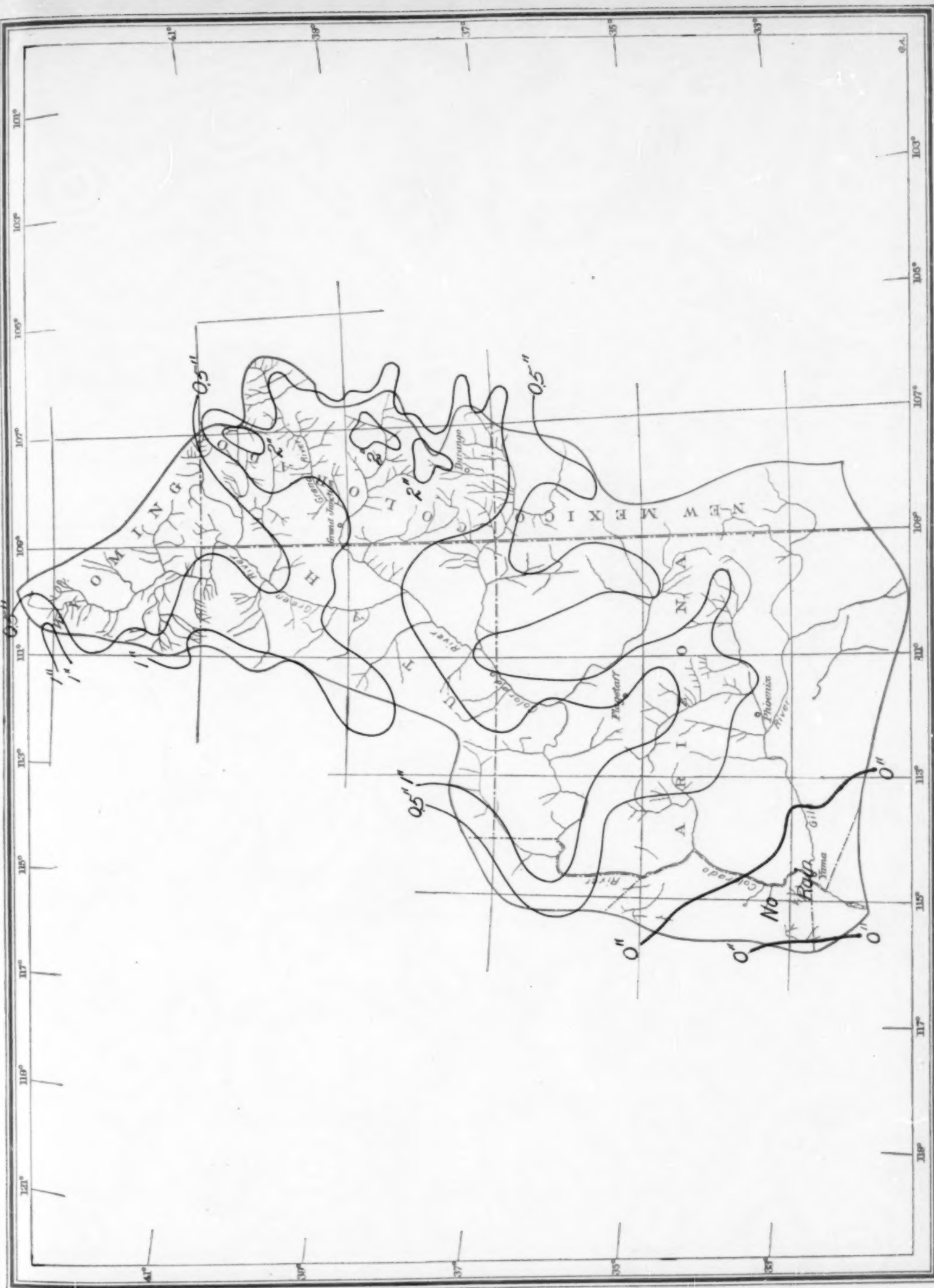


District No. 8.—Departure of the Mean Temperature from the Normal, December, 1910.



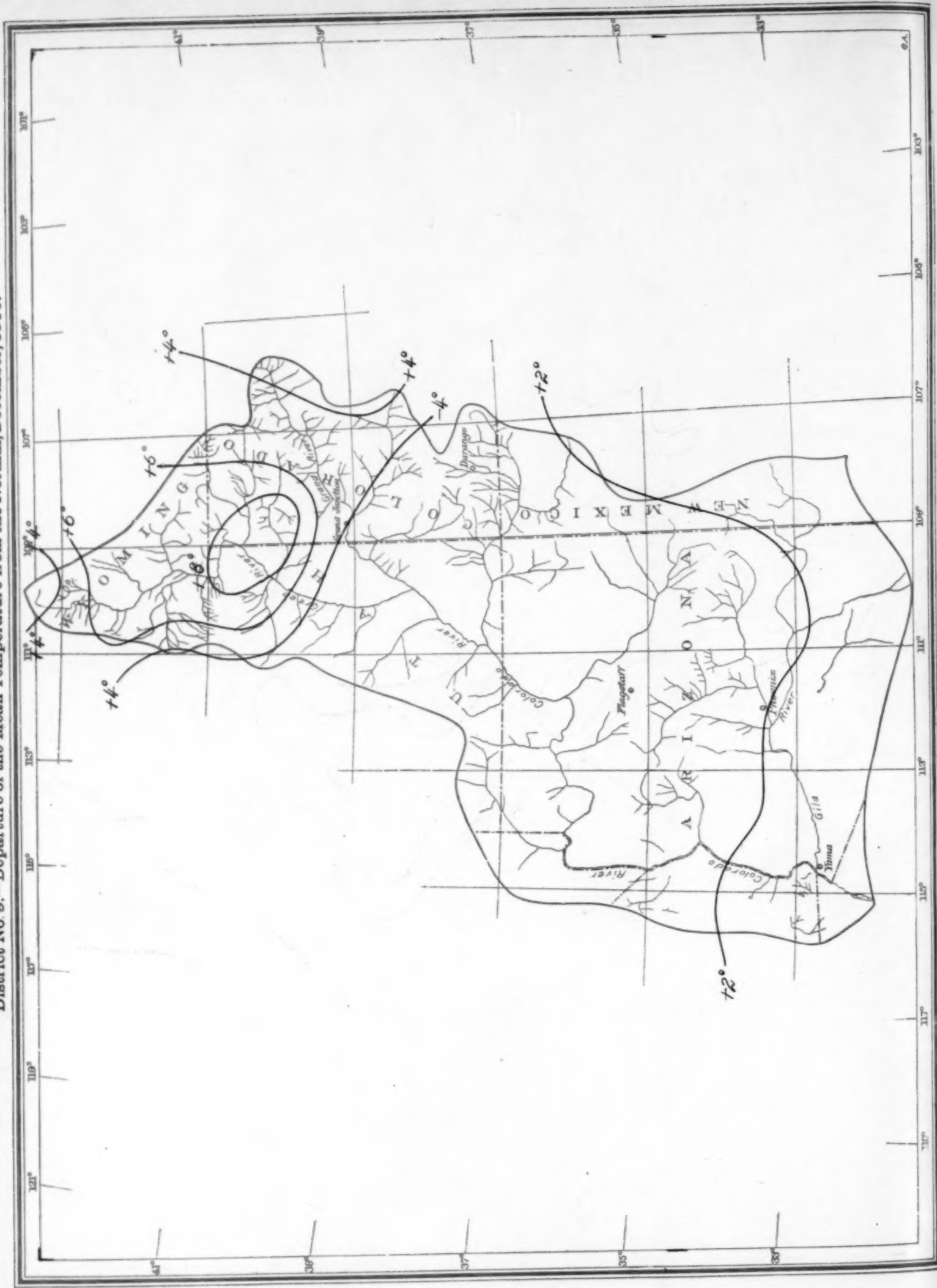


District No. 9.—Total Precipitation, December, 1910.



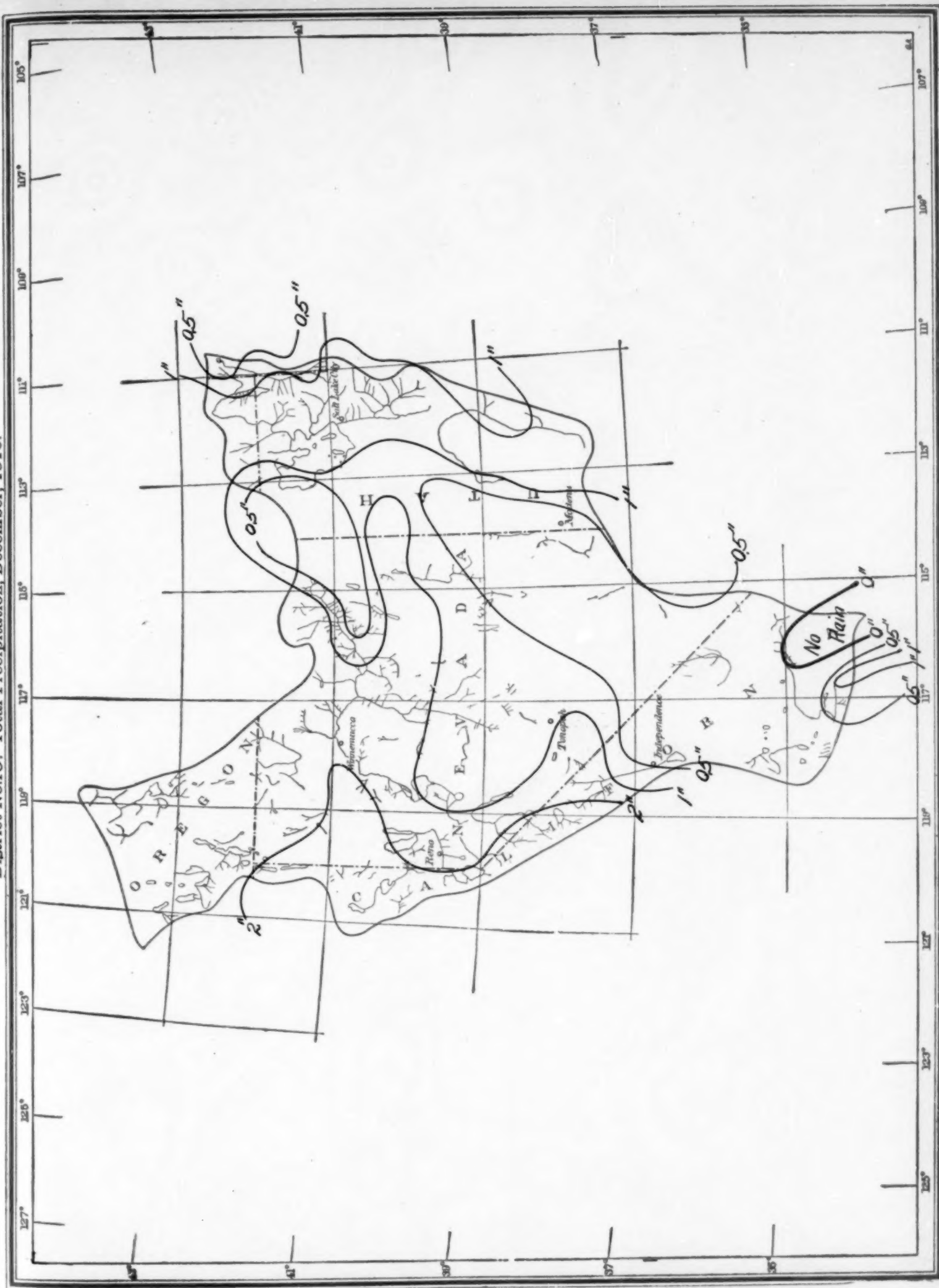


District No. 9.—Departure of the Mean Temperature from the Normal, December, 1910.



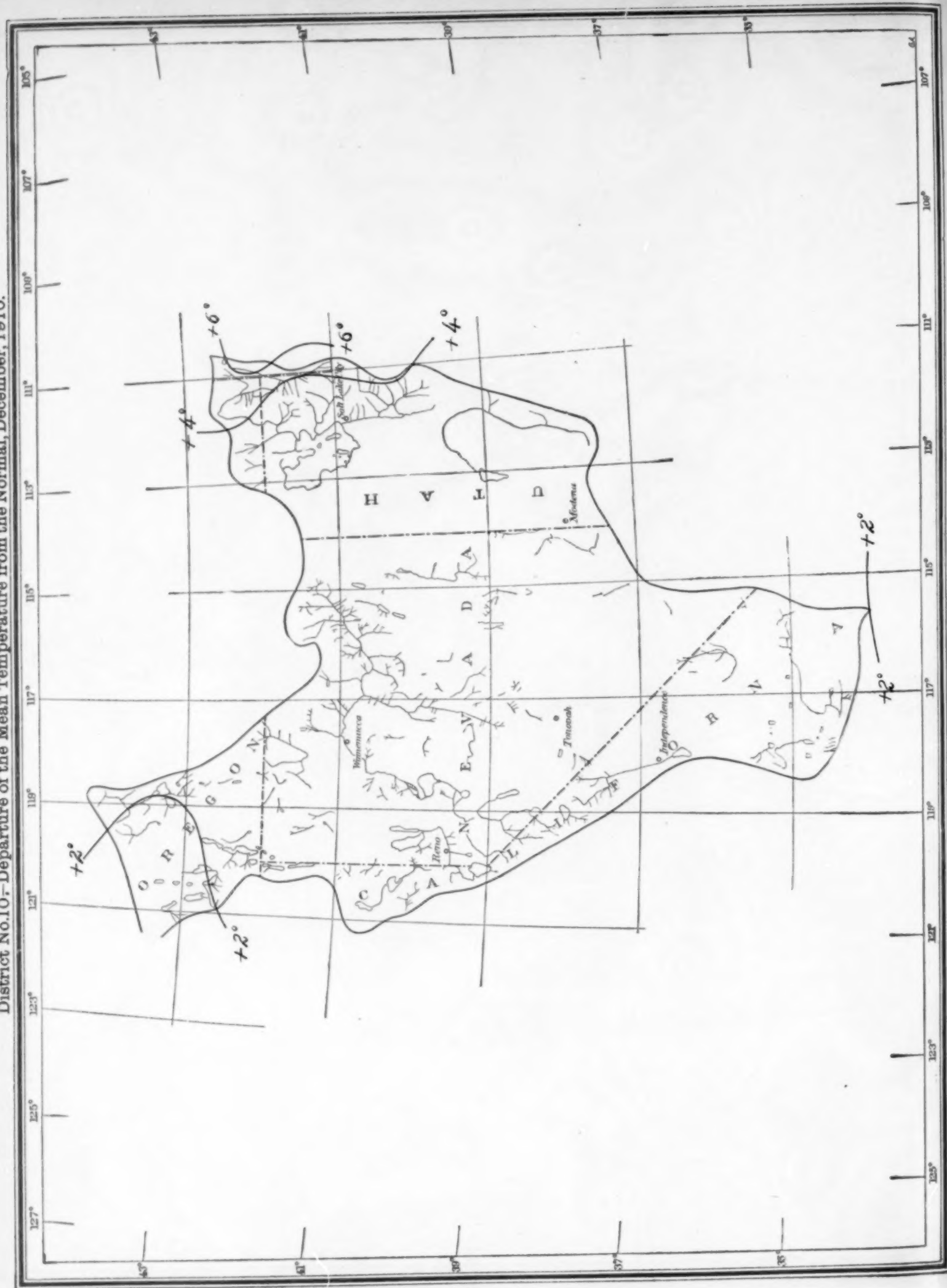


District No. 10.-Total Precipitation, December, 1910.



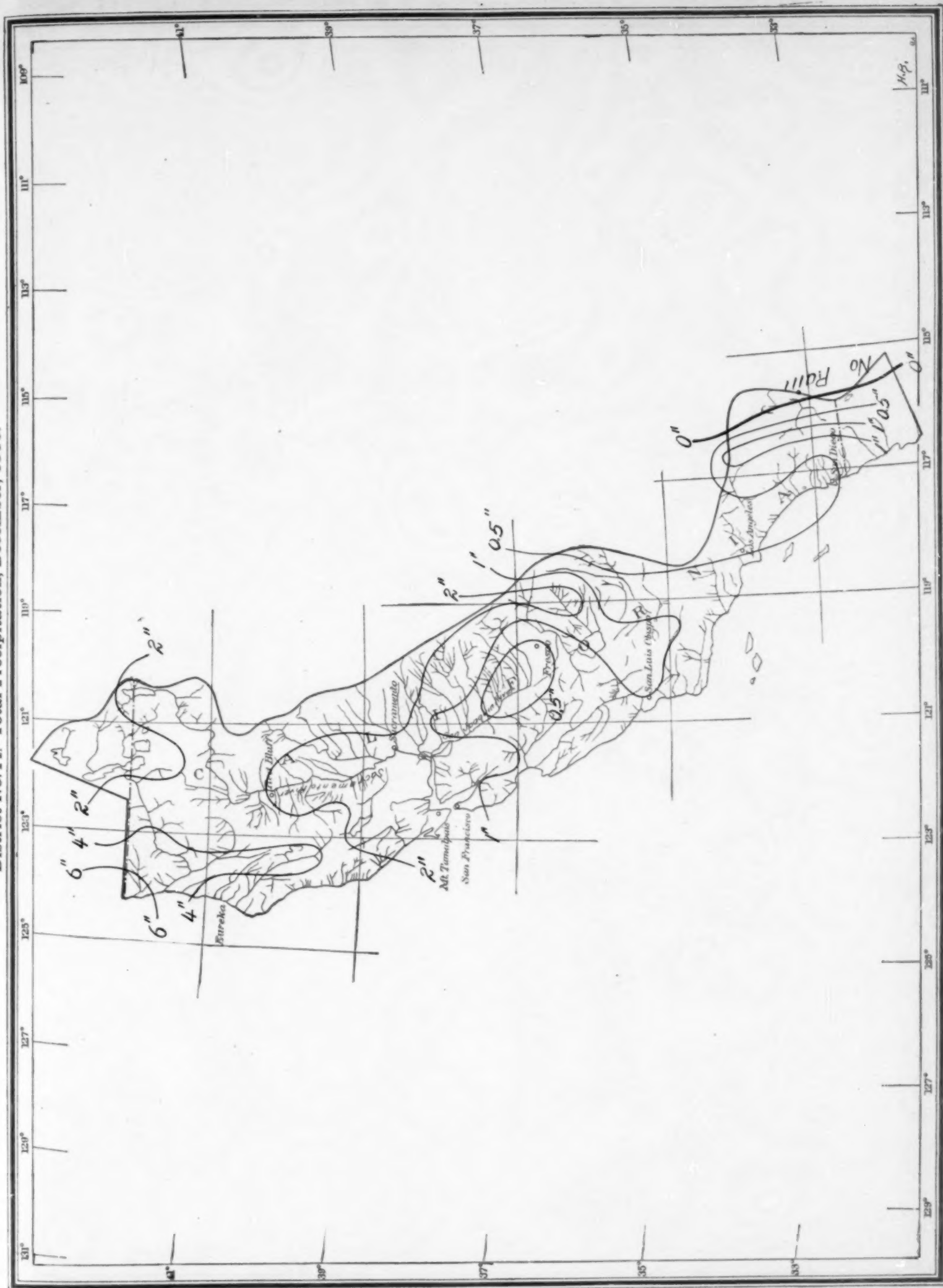


District No. 10.—Departure of the Mean Temperature from the Normal, December, 1910.



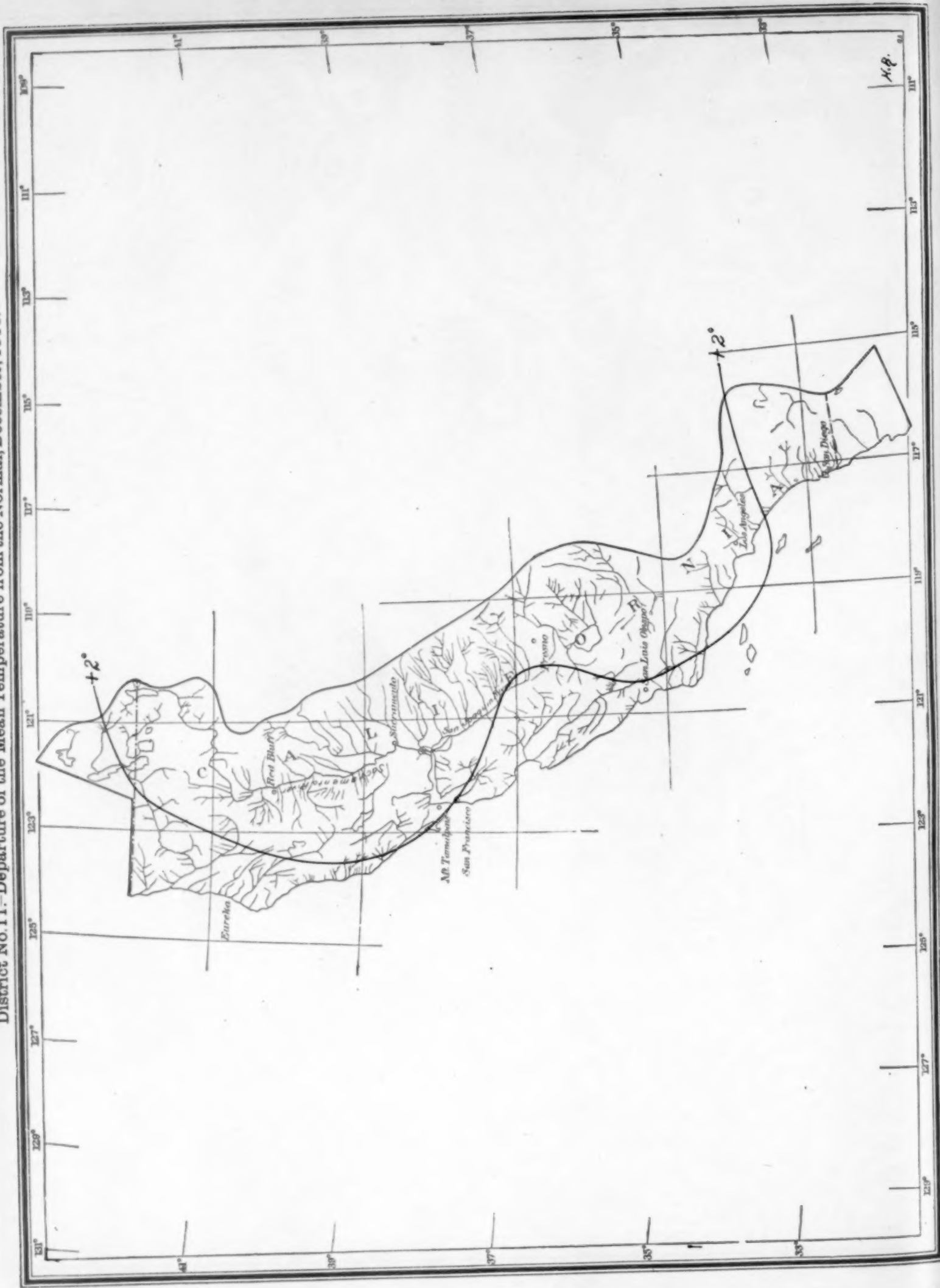


District No. 11.-Total Precipitation, December, 1910.





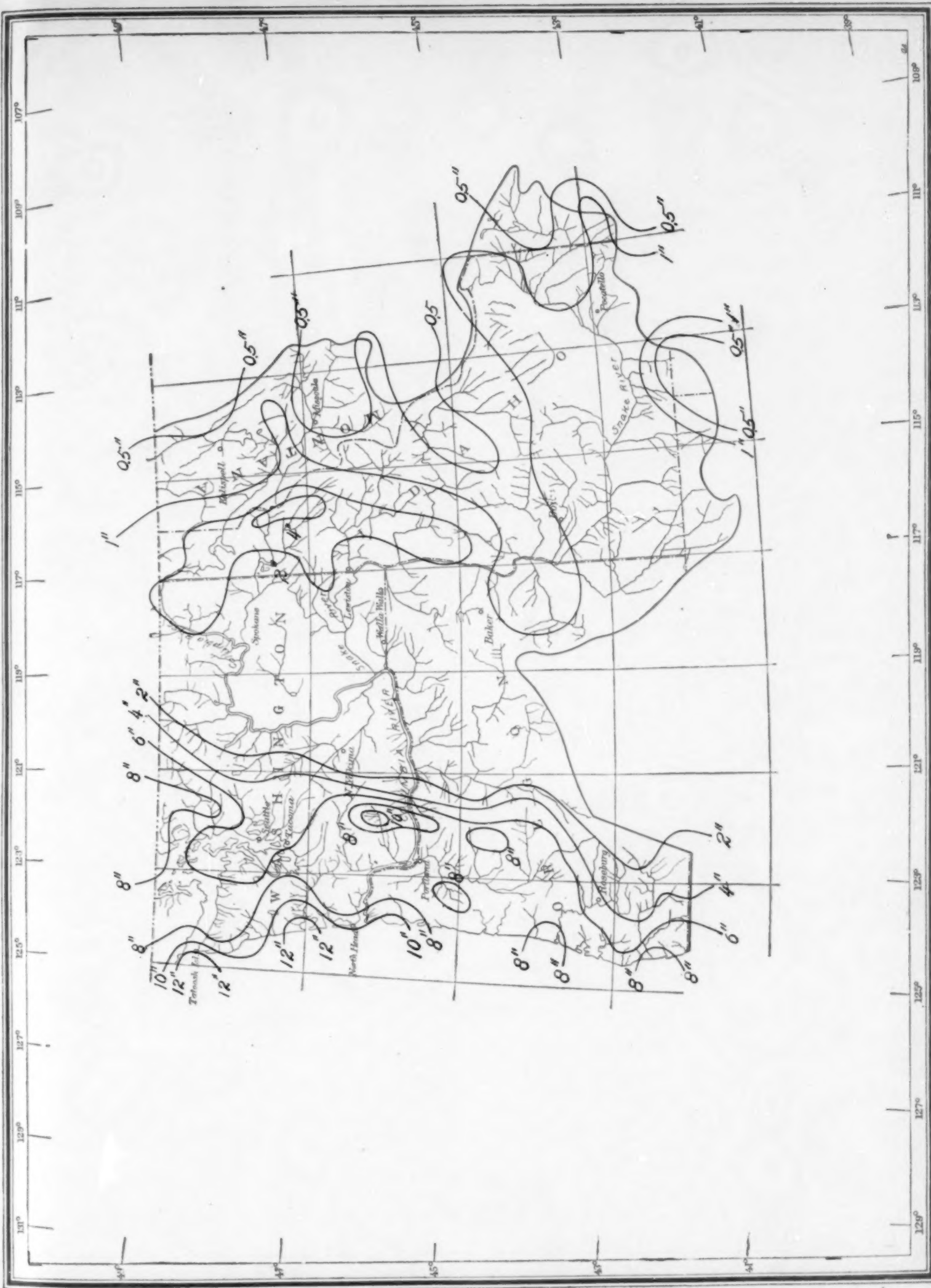
District No. 11.-Departure of the Mean Temperature from the Normal, December, 1910.



District No. 12.-Total Precipitation, December, 1910.



District No. 12.-Total Precipitation, December, 1910.





DISTRICT NO. 12. Departure of the mean 200 feet from the base of the Snake River.

The map shows the Snake River flowing through the center, with various tributaries and surrounding terrain. Key locations marked include Boise, Pocatello, Idaho Falls, and several smaller towns. Contour lines indicate elevation changes, with specific markers such as +20, +40, and +120. The map is overlaid with a coordinate grid, with latitude and longitude coordinates marked along the edges.

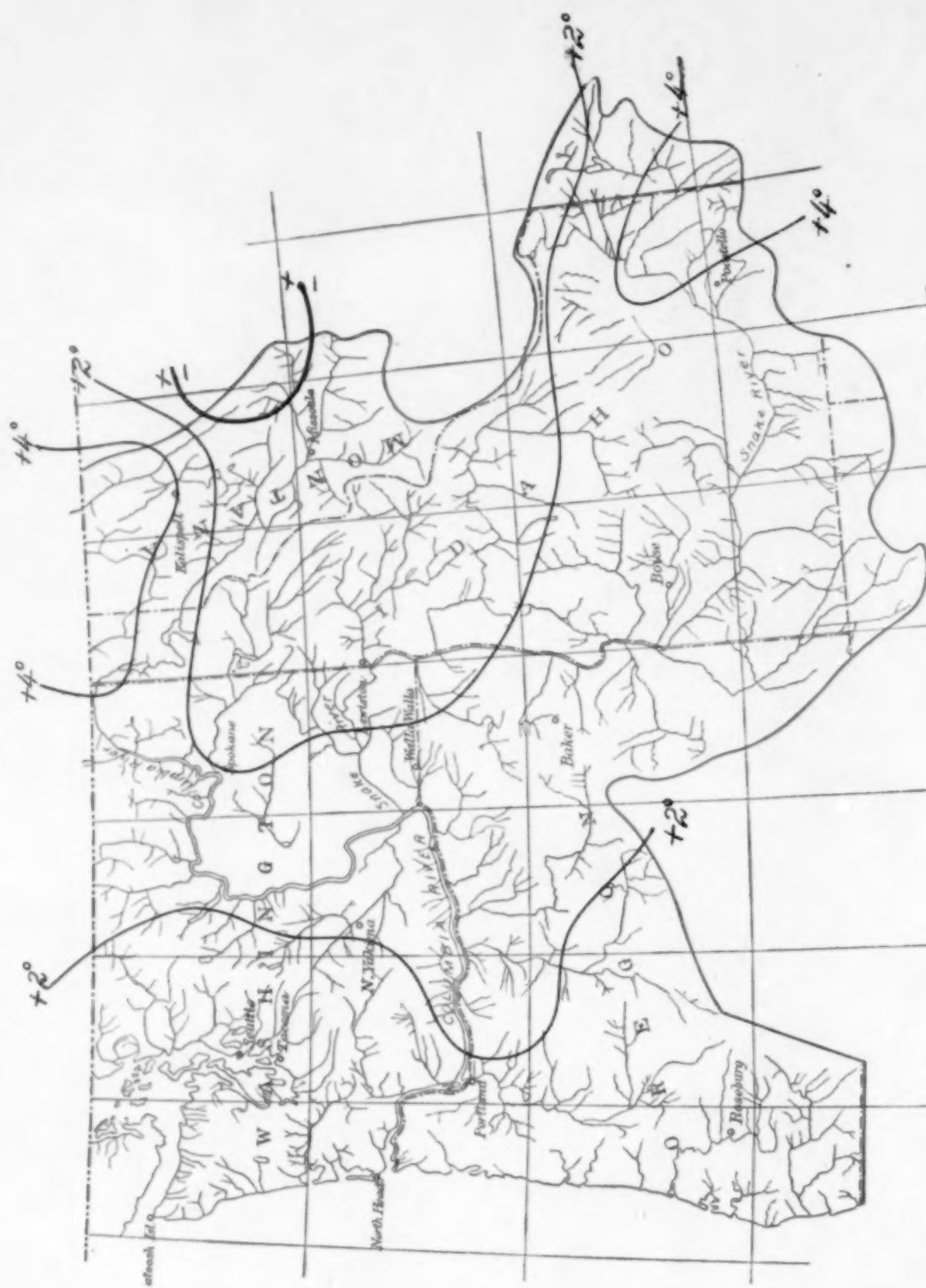




Chart I. Hydrographs of Several Principal Rivers, December, 1910.

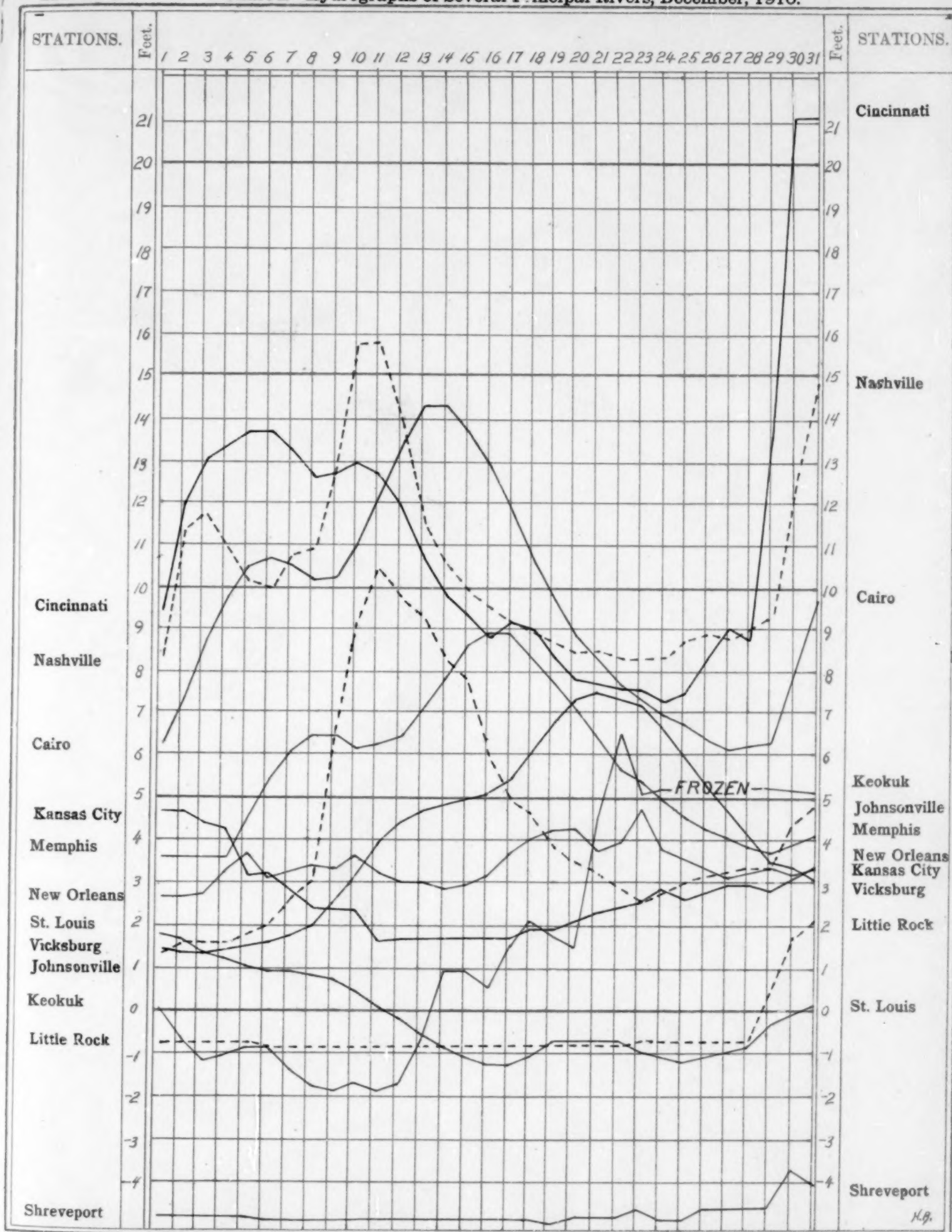




Chart II. Tracks of Centers of High Areas, December, 1910.

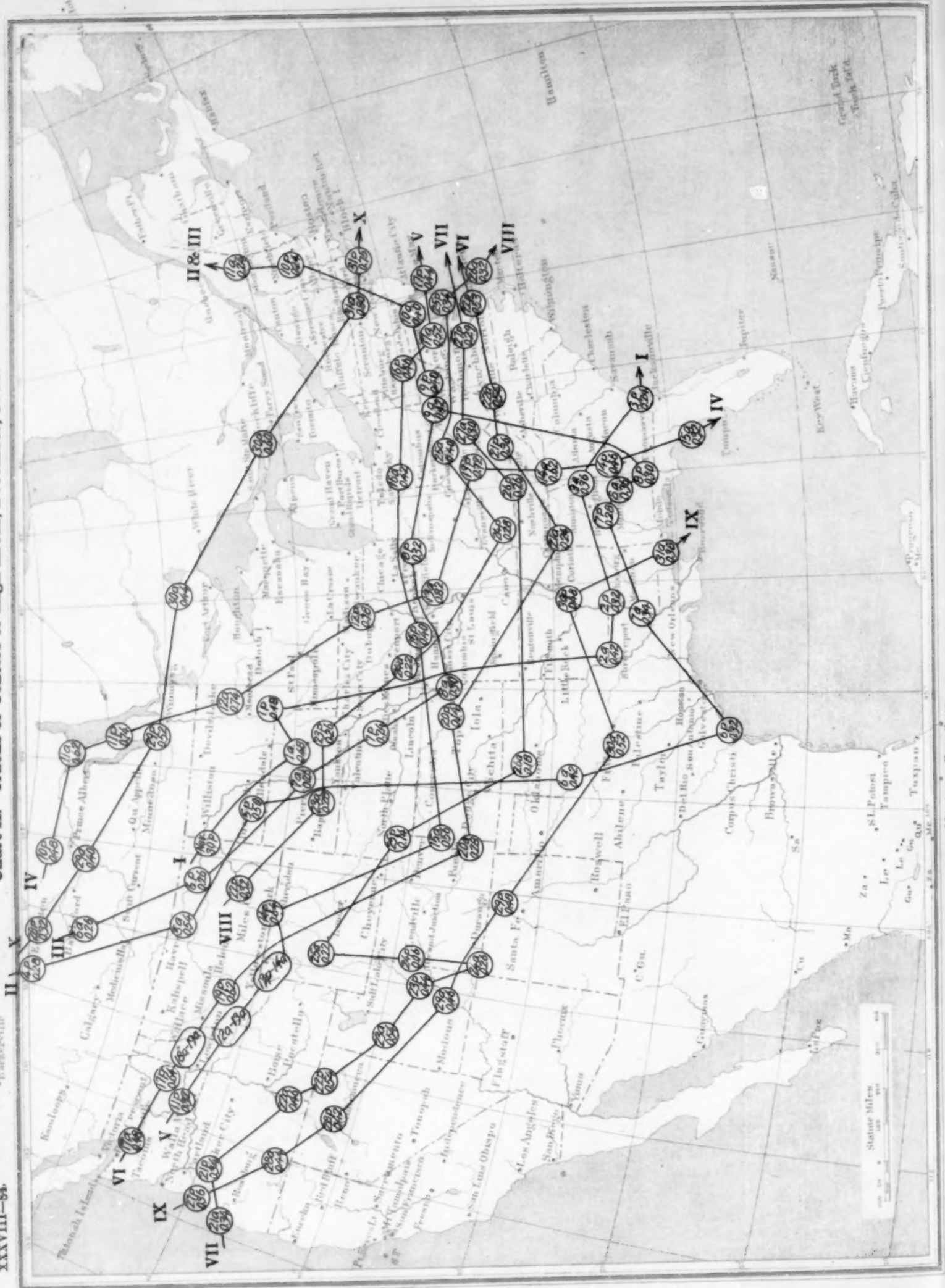
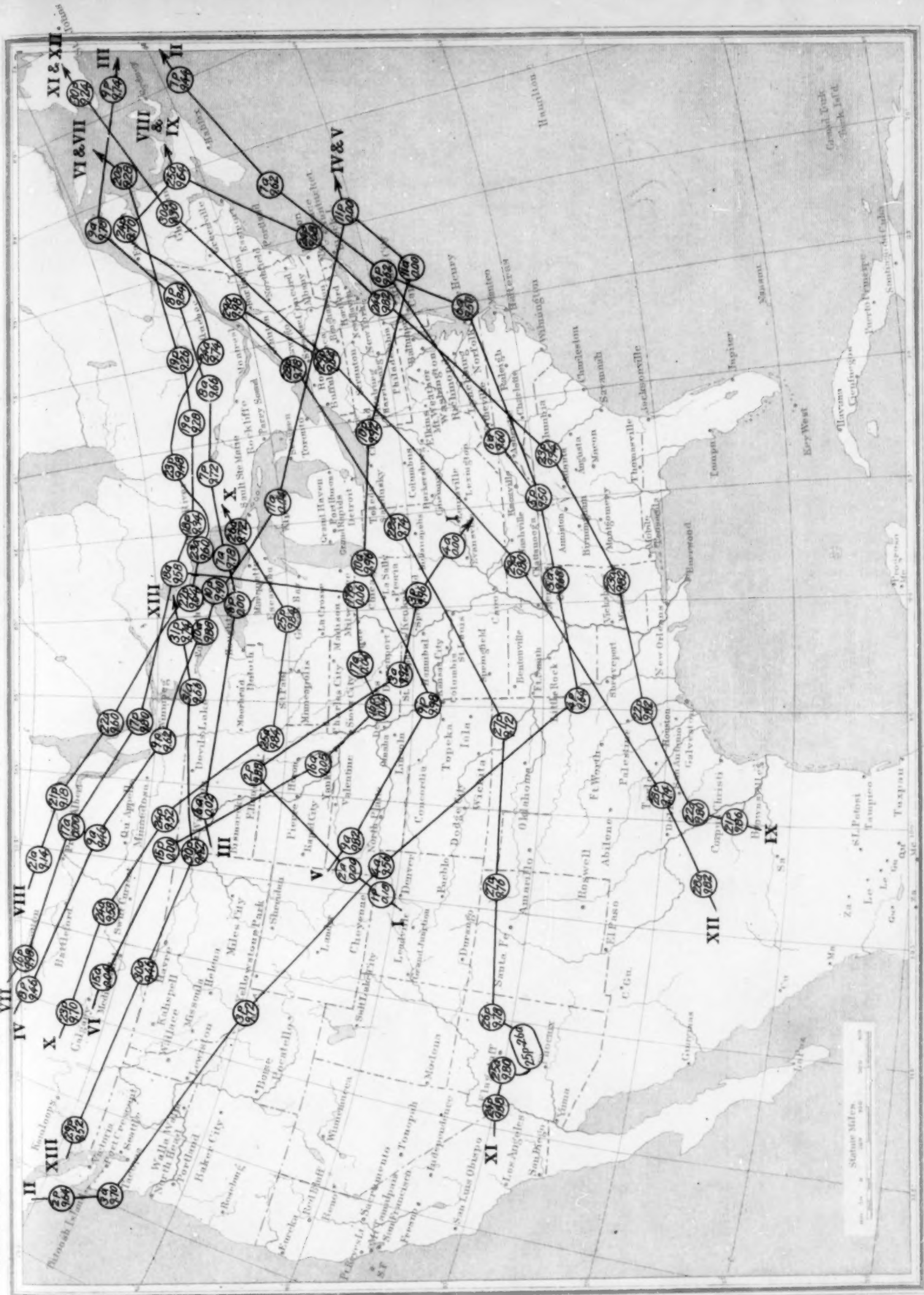


Chart III. Tracks of Centers of Low Areas, December, 1910.



Chart III. Tracks of Centers of Low Areas, December, 1910.



Mexico Vera Cruz



Chart IV. Departure of the Mean Temperature from the Normal, December, 1910.



Chart V. Total Precipitation, December, 1910.



Chart V. Total Precipitation, December, 1910.

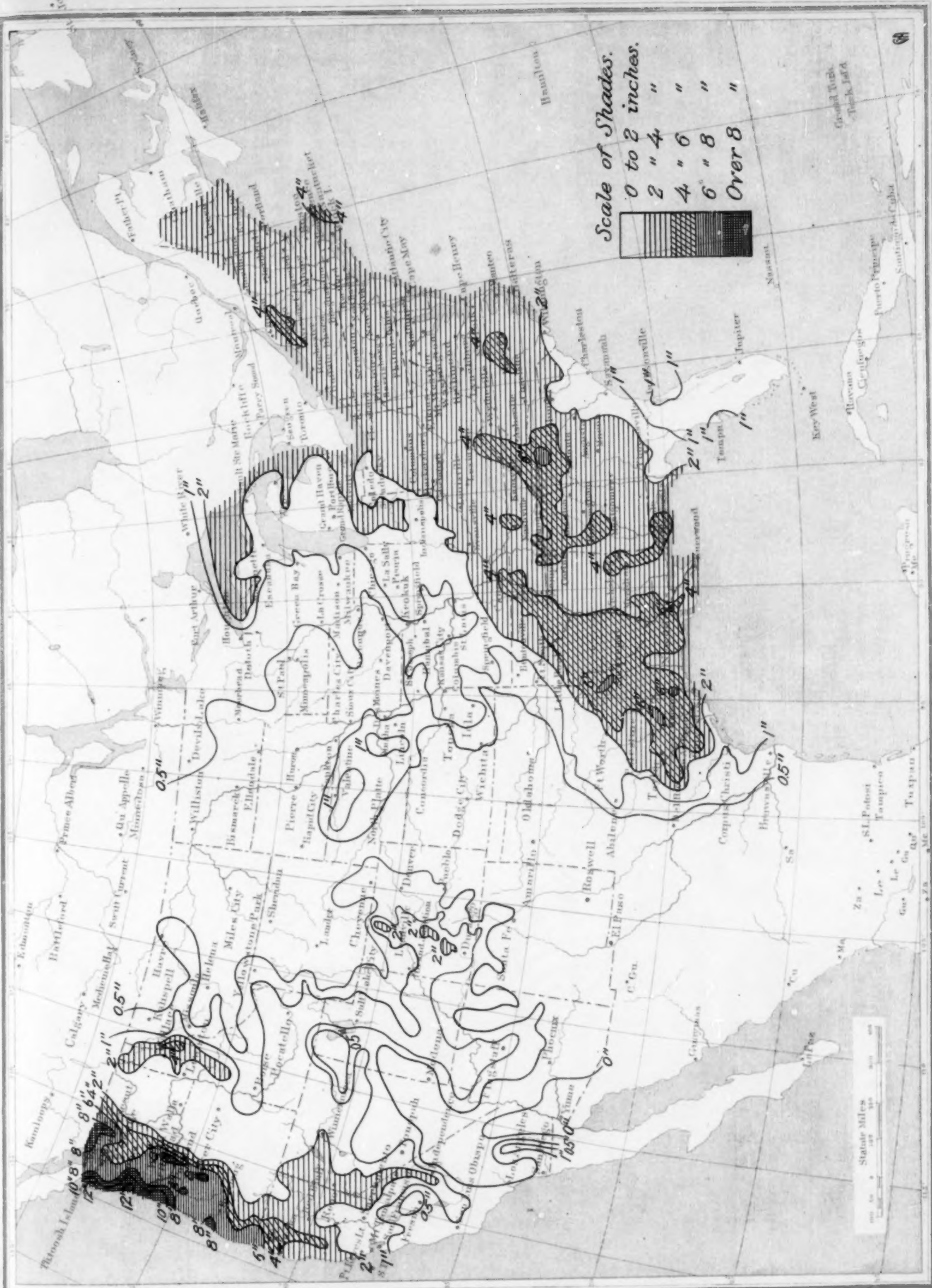




Chart VI. Percentage of Ulear Sky between Sunrise and Sunset, December, 1910.

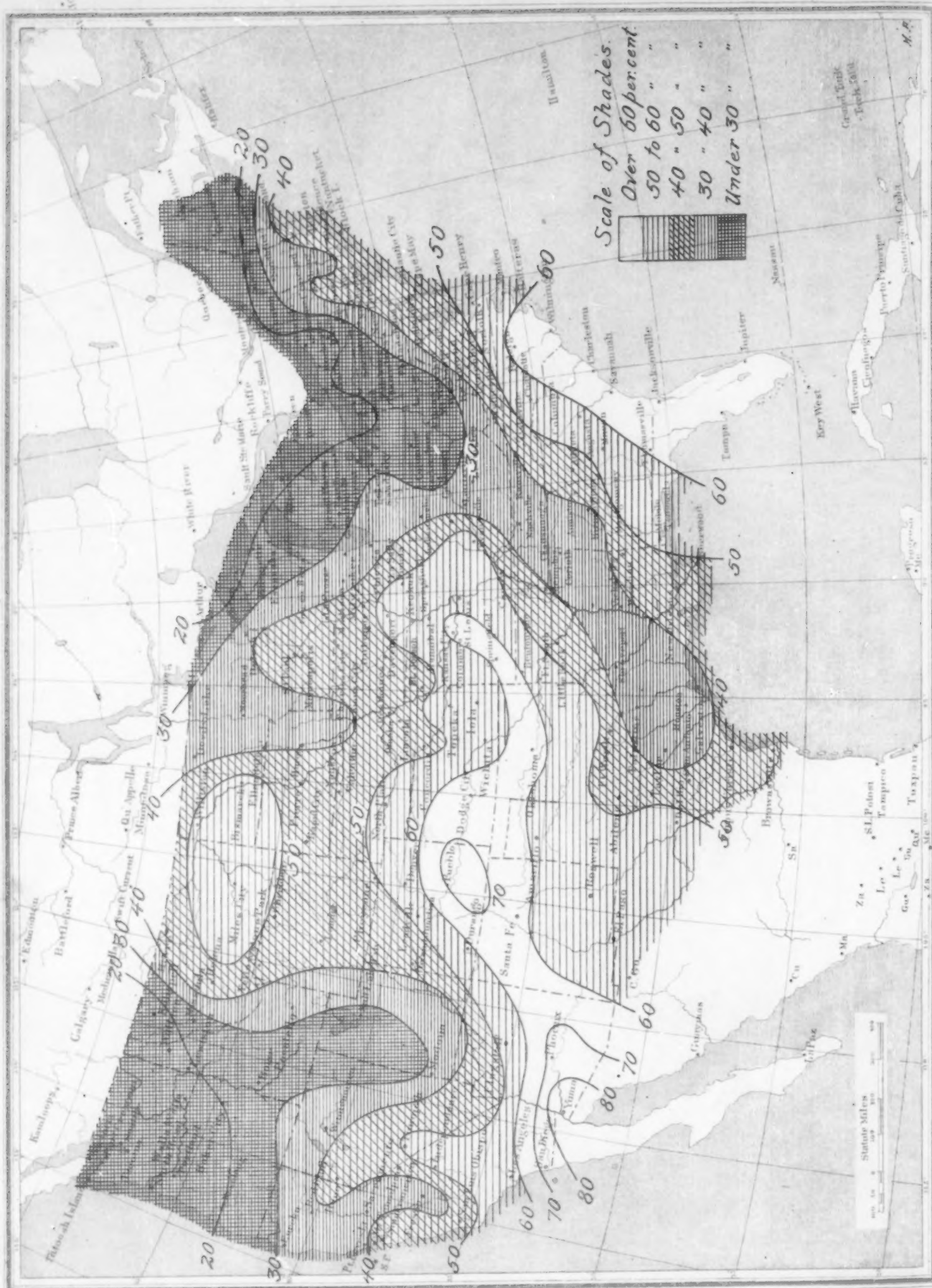
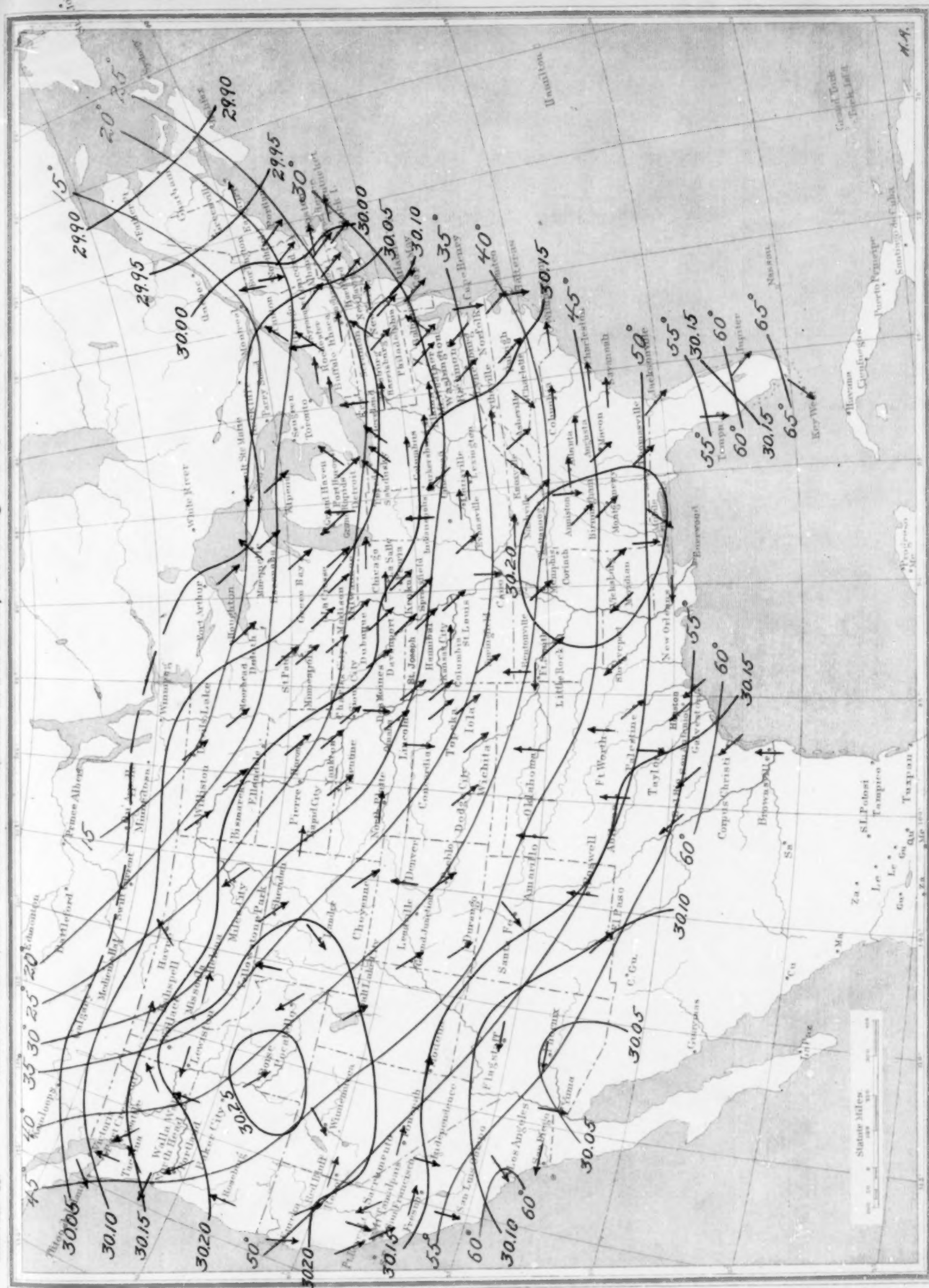


Chart VII. Isotherms and Isotherms at Sea Level; Prevailing Winds, December, 1910.













551.55

III

U

W. B. No. 442.

U. S. DEPARTMENT OF AGRICULTURE,  
WEATHER BUREAU.



# MONTHLY WEATHER REVIEW.

VOLUME 38, No. 12.

DECEMBER, 1910.

PREPARED UNDER THE DIRECTION OF  
WILLIS L. MOORE,  
CHIEF U. S. WEATHER BUREAU.



WASHINGTON:  
GOVERNMENT PRINTING OFFICE



# DECEMBER, 1910.

## CONTENTS.

PART I. CLIMATOLOGY.		CLIMATOLOGICAL SUMMARY FOR—		Page		
CLIMATOLOGICAL SUMMARY FOR—		Page				
District 1.	North Atlantic States.....	1776	District 11.	California.....	1892	
District 2.	South Atlantic and east Gulf States.....	1788	Experiments in frost protection, A. G. McAdie...		1894	
	Waterpower resources of Georgia, [concluded]		Fog and frost in the San Gabriel Valley, A. G. McAdie.....		1898	
	Chas. F. von Herrmann.....	1789	District 12.	The Columbia Valley.....	1906	
District 3.	Ohio Valley.....	1801	PART II. METEOROLOGY.			
District 4.	The Lake Region.....	1813	WEATHER, FORECASTS, AND WARNINGS FOR THE MONTH.....			1927
District 5.	The Upper Mississippi Valley.....	1822	RIVERS AND FLOODS.....			1911
District 6.	The Missouri Valley.....	1834	SPECIAL PAPERS ON GENERAL METEOROLOGY:			
	Are the springs colder now?, George Reeder.....	1834	Recent additions to the Weather Bureau Library. C. Fitzhugh Talman.....			1928
District 7.	The Lower Mississippi Valley.....	1854	Recent papers bearing on meteorology and seismology. C. Fitzhugh Talman.....			1935
District 8.	Texas and the Rio Grande Valley.....	1868	PART III. GENERAL TABLES AND CHARTS.			
District 9.	The Colorado Valley.....	1877	CONDENSED CLIMATOLOGICAL SUMMARY.....			1925
	New site for the Colorado River Dam, L. N. Jesunofsky.....	1877	CLIMATOLOGICAL TABLES:			
District 10.	The Great Basin.....	1884	1. Climatological data, U. S. Weather Bureau stations.....			1927
	Weather Bureau records and their use, W. W. McLaughlin.....	1884	2. Excessive precipitation.....			1928
	Seasonable precipitation measurements, J. Cecil Alter.....	1885	3. Canadian climatological data.....			1927
			CHARTS..... Districts 1 to 12; I-VII			

### PUBLICATIONS OF THE UNITED STATES WEATHER BUREAU.

The following publications, numbered in series, have recently appeared:

W. B. No. 447. Temperature Departures, Monthly and Annual, in the United States, January, 1873, to June 1909, inclusive.

W. B. No. 448. Monthly Weather Review for December, 1910, Vol. 38, No. 12. Price 35 cents.

Persons or institutions receiving the Monthly Weather Review free should send in exchange a copy of anything they may publish bearing on meteorology, addressed "Library U. S. Weather Bureau, Washington, D. C.," in order that the monthly lists of current works on meteorology may be as complete as possible.

BACK NUMBERS.—Recipients of the Review who do not wish to retain this or other publications of the Weather Bureau, but are willing to return them, will confer a favor by notifying the "Chief of Bureau." Do not destroy them.



